ON THE NATURE OF LEARNING:
The Spiral Learning Model

by Joe Walewski, Wolf Ridge Naturalist

“Nobody told her that she was too young.” That’s what I thought a few days later. At that moment when I was watching her, though, I was simply dumbfounded. “How did she do that?” was all I could think as I watched an 18-month old child grab a smartphone, manipulate it to select the camera app, and then take a picture.

Perhaps you’ve seen this before. It was my first time! Since then I’ve heard similar stories.

And so I ask myself, “why is it difficult for me to learn what an 18-month old child seems to have mastered in, well, eighteen months?” More to the point, “why do I often struggle with learning fundamentally new things?” It’s both humbling and aggravating. I know I am not alone. Let’s look into the nature of learning.

Naturalists routinely work at two levels – one on the identification of individual parts of nature and another on the understanding of their relationships to each other. My specific job is to help Wolf Ridge Naturalists improve as educators. For 16 years I’ve been watching some of the best teachers do their magic while also studying the science behind good teaching. During this time the naturalist in me has been hard at work learning about the “parts” and developing an understanding of their “relationships” to each other.

I developed a spiral learning model that describes what I have learned and aspire one day to fully embody. I use the model to help Wolf Ridge Naturalists imagine how to respond to the chaotic and changing world of learning and to develop promising practices for environmental education. It isn’t a model of how to teach. Rather, it’s a model of how people learn. After all, the goal here is to help people of all ages to learn.

Learning is often defined as a relatively lasting change in behavior that is the result of experience. David Kolb’s experiential learning model developed in the 1970s is one attempt at creating a visual diagram to simplify the very complex process of learning. Wolf Ridge curriculum and environmental education in general owes much of its philosophical framework of learning to a variety of modified versions of Kolb’s model. Search the web and you’ll find dozens of renditions. Some are based upon a slightly different set of descriptive words; others are based upon a variation of the format.

The spiral learning model owes its foundation to Kolb’s model. I’ve also integrated bits and pieces of brain biology, storytelling, and improvisation techniques. No real system, and certainly not the human brain, can ever be fully captured by a model such as this. This is not an attempt to model complete reality, but rather to create a simple tool to use for developing curriculum and also for responding in the moment when learning is possible. The nature of learning is messy. This model is neat and incomplete. Still, it’s useful as a tool to begin understanding the process of learning. Let’s take a look.

Every moment provides new opportunities to explore and experiment with the nature of learning.
A game used periodically in one of the classes at Wolf Ridge involves dropping a big pile of pennies onto the floor. The students are suddenly quite attentive. Pennies = resources (food, shingles for a roof, an iTunes card, etc.) “When I say Go, each group will grab whatever resources you need or want to live your lifestyle. You’ll only have a short time to get what you need and want.” “Go”, and the frenzy is on.

Kids scramble on the floor to get pennies and they return to their seats with a pile. Once all the groups have grabbed their pennies and counted, the instructor begins the discussion, distinguishing what we need vs. want and to consider the needs of successive generations and others around the world. Pennies go back to the floor and successive rounds are played. How we use our resources is the basis for discussion as participants consider their choices. It’s the perfect experience for setting up discourse about the future, our built environment, and our lifestyle.
“S”o I asked, “what’s a wilderness for?” I looked out over the small crowd of seventh grade students for a hand. No luck yet. This was the final question of the final segment of the Superior National Forest’s wilderness education program. The students had seen me before in second grade and in fourth grade, and now everything we’ve covered in the three year program is wrapped up in that one final culminating grammatical question: what’s a wilderness for? It’s a good question, and it has taken two naturalists, a truckload of props and equipment, and hours of work to get these seventh graders to the point where we could ask it.

Fifty years ago, it took eight years and sixty-six draft bills to get Congress to a point where they understood it enough to pass the landmark piece of legislation known as the Wilderness Act. On this fiftieth anniversary of the Act, it pays for us to stop and consider the same question as Congress and the seventh graders—what is a wilderness for?

Our wild lands in the United States have experienced for many uses, but until the Wilderness Act, most of those uses have been based on human benefit. European settlers saw the wild lands as places to develop into towns and farms. By the late 19th century, some wild lands were being set aside as parks such as Yellowstone, but even Yellowstone’s reason for being was human centered. It created for a “public park or pleasure ground for the benefit and enjoyment of the American people.”

It wasn’t until after the turn of the century that Arthur Carhart, Aldo Leopold and Bob Marshall started to develop a different use for wilderness, a use not based on human needs and desires, but on a land ethic. Wilderness needed to be preserved not for us to use, but just because it is right. In a famous memorandum to Leopold in 1919, Carhart wrote one of the first and best descriptions of this wilderness idea: “There is a limit to the number of lands of shoreline on the lakes; there is a limit to the number of lakes in existence; there is a limit to the mountainous areas of the world, and... there are portions of natural scenic beauty which are God-made, and... which of a right should be the property of all people.” No designated use, just a right to exist. In 1920, Carhart used this argument to have the land around Trappers Lake in the White River National Forest, Colorado, not be used for cabins, but instead preserved roadless and undeveloped.

It is a tribute to him that it remains so today. Leopold carried this one step farther in 1934 in championing the Forest Service’s creation of the Gila Wilderness Reserve, the first area designated for use as a wilderness. The idea that wilderness is a use, just as ‘campground’ or ‘timber harvest’ areas are, is important. The Gila Wilderness was designated to be used as a wilderness and didn’t need to justify itself with a list of other uses. This idea that wilderness isn’t just a description, but a use of land, opened up a whole new way of looking at things.

Over the next few decades, other pieces of acquired land use designations as wilderness, primitive areas, canoe areas, and roadless areas. By 1955, the piecemeal method of preserving wild lands was seen to have some problems. Howard Zahniser, a former head of the Wilderness Society, stated “Let us be done with a wilderness preservation program made up of a sequence of overlapping emergencies, threats, and defense campaigns,” and wrote the first draft of what was to become the Wilderness Act. In 1956, the bill was introduced in the Senate by Democrat Hubert Humphrey from Minnesota and in the House by Republican John P. Saylor of Pennsylvania.

It took eight years, 66 drafts, and 18 hearings for the bill that would pass unanimously in 1964. The Wilderness Act became a law that would pass unanimously in 1964. The Wilderness Act became a law which states “it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.” It goes on to define wilderness: “A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain.” Wilderness was finally seen as having benefits all on its own. It could be set aside independent of recreational value, or esthetic value, or timber resource value, but because the resource of wilderness itself has value.

Fifty years from the passage of that law, a hand crept up from the mass of seventh graders. “Okay,” I said, “go ahead, what’s a wilderness for?” Long pause. “It’s for oxygen, right?” Well, yeah. More answers: “Homes for animals.” Of course. “Carbon sink against climate change” Ooo, they were listening! “A place to relax and be alone” Nice. “A place to fish.” Yep. And then, finally “A wilderness is for, well, it’s just for wilderness.” And that, more than all the others, is it exactly. Wilderness is for adventure, clean air, carbon storage, clean water, canoeing, camping, relaxing, habitat for animals and plants - it is for all those things and more. But mostly designated wilderness areas exist because 50 years ago, people realized that wilderness doesn’t need to be for anything. And so, alongside the Civil Rights Act of 1964, is another declaration of rights. It declares that wilderness simply has a right to exist, and because of that, our land ethic calls for us to help preserve it as ‘an enduring resource of wilderness’.

Our wildernesses are the wild places that belong to all, not just for wilderness.” And that, more than all the others, is it exactly. Wilderness is for adventure, clean air, carbon storage, clean water, canoeing, camping, relaxing, habitat for animals and plants - it is for all those things and more. But mostly designated wilderness areas exist because 50 years ago, people realized that wilderness doesn’t need to be for anything. And so, alongside the Civil Rights Act of 1964, is another declaration of rights. It declares that wilderness simply has a right to exist, and because of that, our land ethic calls for us to help preserve it as ‘an enduring resource of wilderness’.

The 2015 Wolf Ridge calendar features the outstanding photography of Jim Brandenburg. Jim traveled the globe as a photographer for National Geographic magazine for several decades. His photography has won a multitude of awards including the “World Achievement Award” from the United Nations in recognition of using nature photography to raise public awareness for the environment. Brandenburg has published many bestsellers. Brandenburg’s work can be seen on his web page www.jimbrandenburg.com. Calendars are available for $14.00 for donor members and $18 95 for non-donor members, including shipping. They are also available at special prices, in lots of 20 for school fundraising and retail resale. Proceeds of all calendar sales directly support children attending Wolf Ridge school programs. Call Wolf Ridge at (218) 353-7414 for more information and to order.
Spiral Model of Learning

imagination

connection

perception

reflection

“A teacher in her life encouraged her to try and maybe even showed her how to use her phone. Fine. It all started with the belief that she could succeed. The first step on our way to helping learners learn anything, then, is to build a positive image of what is possible.

“Whether you believe you can or not, you’re right.”
— Henry Ford

It could be that a “teacher” in their life encouraged her to try and maybe even showed her how to use her phone. Fine. It all started with the belief that she could succeed. The first step on our way to helping learners learn anything, then, is to build a positive image of what is possible.

“All learning begins with personal experience.”
— John Dewey

We are constantly taking in sensory information. The stick-figure represents the next phase called perception.

Many of our metaphors are based in vision - “show” me what you mean and I “see” it. We have great trust in our senses, believing that they give us completely accurate information – that makes “sense” to me implies that our senses don’t deceive.

“In this phase of learning, teachers should provide learners with an authentic experience fully engaging the senses. Though the little girl most certainly would not find success with her first use of the smartphone, learning begins with her sensory perception of personal experience.

“Whatever the issue, community is the answer.”
— Margaret Wheatley

After acquiring an emotional tag, the smartphone experience is sent on to the uniquely human part of the brain called the prefrontal cortex (represented in the model by a lightbulb). Located just behind our forehead, this is where we actually do our “thinking.” The region mainly serves as a repository of stories. It’s where we work to make connections to previous information and stories. And we are truly wired for story.

Unfortunately, the use of this region requires great amounts of energy. As an evolutionary safeguard, we are not wired to use this section EVERY time we work with incoming information. We might call it a “habit” when we bypass the prefrontal cortex moving right on to the motor cortex with a quick response. A habit occurs without thought – habits are “thought”-less.

Habits are both good and bad. They are patterns we develop in order to save energy. At the same time, these patterns are difficult to change and routinely provide barriers to new ways of thinking. They can stop the learning process.

As the learner navigates this phase of the spiral learning model, the teacher’s responsibility is to help connect the developing story with previous experiences and to help the learner make meaning of experience.

“Whether you believe you can or not, you’re right.”
— Henry Ford

Returning to the apparent beginning of the spiral learning model (the cloud), the teacher’s job now is to help ensure that the learner imagines a better series of desired actions and goals.

A few. Many of these names reference fire and, indeed, Fireweed does have a close association with fire or disturbed areas such as roadsides. Fireweed, with its wind-dispersed seeds is a native pioneer plant that readily blows into burned areas and germinates quickly under sunny skies.

Fireweed does not enter most people’s radar until it begins blooming in late summer. However, if you are thinking about eating Fireweed, the time to go foraging is spring. The young shoots can be cooked like asparagus and the young leaves as a green like spinach. If harvested too late, the taste may be bitter. Mature leaves dried can be made into a tea said to soothe and promote intestinal health.

Our Fireweed blooms are reaching the apex of their stalks. Summer is reaching its end in the north woods. Soon their cottony wisps of seeds will be floating off to settle on bare ground, ready to start the cycle again.

As the first buses of the new school year rolled up the Wolf Ridge driveway, their arrival was heralded by masses of waving roadside flowers. These flowers are not the delicate and tiny white harbinger of spring but a tall and colorful bunch shooting the last joys of summer and beckoning us to fall. One can see yellow golden rods, cheery faced woodland sunflowers, and a variety of purplish white asters. A notable favorite is the Fireweed, Epilobium angustifolium. This living firework of a plant grows three to seven feet tall. Its showy magenta color makes recognition easy. The flower consists of four roundish petals. Leaves are alternate, long and narrow, and without teeth. The flower-bearing stalk resembles an up-side-down waffle cone in shape. As the season progresses, upward pointing seedpods, flowers, and buds can be present all at the same time on a stalk. A common saying advises us, “When Fireweed blooms to the top, summer is over.”

Fireweed has multiple common names: Willow Herb, Moose Tongue, Firetop, Burnweed, and Purple Rocket to list just a few.
**2014-15 SEASONAL NATURALISTS**

Nils Anderson  
Hometown: Two Harbors, MN  
BA Environmental Studies  
Gustavus Adolphus College

Brent Burton  
Hometown: Appleton, WI  
BS Wildlife Ecology & History  
U of WI - Madison

Caitlin Cleary  
Hometown: Shullsburg, WI  
BA Biology  
DePauw University

Marie Fargo  
Hometown: Green Bay, WI  
BS Resource Mgmt & Env Ed  
U of WI - Stevens Point

Larissa Geibner  
Hometown: Coldville, MN  
BA, Biology, & Teaching Life Science  
U of MN - Duluth

Cian Gill  
Hometown: Cork, Ireland  
MSc Ecological Assessment  
University College - Cork

Hannah Hemmelgarn  
Hometown: Columbia, MO  
BA Anthropology-Sociology  
Truman State University

Megan Johnson  
Hometown: Virginia, WI  
BS Env Science & Biology  
University of Dubuque

Dylan Kelly  
Hometown: St Paul, MN  
BA Political Science  
U of MN - Twin Cities

Haley Marks  
Hometown: Geneva, IL  
BS Neuroscience  
U of MN - Twin Cities

Fiona O’Halloran-Johnson  
Hometown: Morris, MN  
BA Integrated Elementary & Special Ed  
U of MN - Duluth

Luciana Ranelli  
Hometown: Duluth, MN  
BA Biology, 2nd Ed - Life & General Science  
U of MN - Morris

Shane Steele  
Hometown: Rochester, MN  
BA Biology  
Luther College

Sydney Stock  
Hometown: Eden Prairie, MN  
BA English & Sustainability Studies  
U of MN - Twin Cities

Grace Theisen  
Hometown: Minneapolis, MN  
BA Education  
Knox College

Sarah Waddle  
Hometown: St Paul, MN  
BA Environmental Studies  
Earlham College

**PROFILE: Tom Osborn**

What is your connection to Wolf Ridge ELC? In 1979, my close teaching buddy, Doug Hage, and I started bringing fourth graders from Hilltop Elementary School in Mound, MN, to Wolf Ridge. Bringing kids to Wolf Ridge continues today, as Doug and I joined Hilltop in May for the school’s 35th year. In addition, I’m very privileged to be a member of the Board of Directors at Wolf Ridge, starting my 7th year.

What is your current occupation? I’m currently retired from teaching, although I do some subbing at Hilltop and organize a rock program every year for 4th graders there. My wife and I spend several months during the year hanging out in Mesa, AZ, teaching and working in a lapidary shop.

Tell us about your family. My family includes my wife, Lynn, of 44 fantastic years and three wonderful daughters and sons-in-law. When not in Arizona or Minnesota, my wife and I are traveling to see our daughters in Portland and Salt Lake City. Now that we are grandparents as of July 13th, we will be traveling more to Salt Lake City to be with our new grandson, Dylan. Also, one of our daughters in Portland is expecting in December, so we will be seeing the Pacific Northwest at least once a year. The travel highlight of this year was hiking to Havasupai in the Grand Canyon, exploring the amazing waterfalls in this mystical place.

Tell us about something you have learned from your Wolf Ridge experiences. I’ve been friends with young learners who have been underachievers at their home school but thrive in the learning environment at Wolf Ridge.

What is your favorite place at Wolf Ridge and why? My favorite place at Wolf Ridge is sitting on the gigantic rocks outside the Welcome Center at sunset. I’m always amazed by what kids and families are doing here. The spirit of Wolf Ridge is contagious. With every activity, the students are expected to have fun, learn, and contribute to our shared goals. When I arrive in the morning, I’m always amazed by what kids and families have accomplished.

Tell us about a time when you were particularly impressed by a student. There are so many memories from Wolf Ridge. However, the one that seems to surface in my old brain is when Susie was at the ropes course. Susie, a shy and awkward girl, survived the first element of the course; but she hit a stone wall at the Burma bridge. Sobbing, she said, “No way, I’m done.” The other kids in the class said, “Susie, you can do it. We were scared too, but don’t give up.” After thirty minutes, (it seemed like hours) Susie finally made it across the Burma bridge. Classmates continued cheering and calling positive comments. “Susie rocks. You can do it.” After thirty more minutes, Susie continued to cry but slowly tackled the remaining challenging course stations and finally reached the last element with the zipline. At that point, Susie froze, but her classmates advised her to sit, smile, and that they would cheer her all the way down the zipline. Susie finally inched her body off the hard wood platform and whizzed down. As she was being helped off with her harness, Susie had the biggest smile on her face. At the culminating activity, Susie, who is normally a quiet student refraining from raising her hand in class, raised her hand up in the air and said, “I would like to thank everyone for helping me have the greatest day of my life.”

What is your favorite place to Wolf Ridge and why? My favorite place at Wolf Ridge is sitting on the gigantic railroad-size anesthesia boulders on top of Marshall Mountain. The scenic vistas of Lake Superior and Wolf Lake are amazing. Such a peaceful and tranquil setting!

What are your hobbies? I love playing tennis, collecting rocks, fishing, hiking, and reading.

What book and/or movie would you recommend others read? As an avid reader, it is difficult to pick out one favorite book, but top on the list would be To Kill at Mockingbird, Into the Wildness, and Desert Solitaire.

Any final comments? We need to convince more administrators and teachers to bring their students to Wolf Ridge to experience “Learning in the woods!” The students have an incredible time filled with so many positive growth experiences and, at the same time, learn about being environmental stewards of our planet. Wolf Ridge continues to be an outstanding opportunity for students, teachers, and parents to experience hands-on education in an exceptional learning environment.
**WINTER CAMPS**

**Winter Camp:** (6th-8th gr) Dec 27-31, 2014

*Fee:* $380 includes round trip Wolf Ridge bus service from Twin Cities or Duluth.

The snow on the ground simply allows you to create brand new footprints every day. Come up for four fun-filled days at Wolf Ridge during the winter school break between Christmas and New Year's day where you can strap on some snowshoes and explore our 2,000-acre campus, build snow sculptures, dogsled and more.

**Winter Family Camp:** Dec 27, 2014-Jan 1, 2015

*Fee:* $325/person ages 5-adult $162.50/person ages 2-4 Free for children under 2.

Reflects one room per family/group.

Discover the joys of winter while skiing through the crisp snow, peering into a frozen lake through a dark house, snowshoeing to a spectacular view of Lake Superior and dog sledding through fresh fallen snow. Ring in the New Year with new friends at the family folk dance and celebration.

**Winter Grand Adventure Road Scholar Intergenerational:** Dec 27, 2014-Jan 1, 2015

*Fee:* Starting at $579

Give your 8-12 year old grandchild the priceless gift of your time as you explore Minnesota's northwoods in winter with them. Through hands-on activities and outdoor discovery, you'll ice fish and explore winter lake ecology, snowshoe to an Ojibwe site, hop on a dogsled, climb our indoor rock wall, try new crafts and many more activities. Call Road Scholar at 1-800-454-5768 to register.

**SUMMER 2015**

**Fun for All Ages**

**Summer Sampler:** (2nd-5th gr) June 24-27, Aug 19-26: $352


**Adventurers:** (8th-9th gr) July 19-25, July 26-Aug 1, Aug 2-8, Aug 9-15: $567

**Day Camp:** (1st-7th gr) June 22-26: $177

**Voyageurs 2-wk Ultimate Survival:** (6th-7th gr) Aug 9-22: $1200

**Angling to Archery:** (6th-7th gr) Aug 16-22: $602

**Camp Fish:** (7th-8th gr) July 12-18: $602

**Camp Rock Climbing:** (8th-9th gr) Aug 9-15: $602

**Ecology Credit Camp:** (10th-12th gr) July 12-Aug 8: $2000

**BWCAW Canoe:** (7th-8th gr) July 5-11, Aug 16-22: $572

**Sailing Lake Superior:** (7th-8th gr) July 21-27: $800

**Counselor-in-Training:** (10th-12th gr) Aug 2-15: $1200

**Adventurers 2-wk BWCAW Canoe:** (8th-9th gr) July 12-25: $1278

**Adventurers 2-wk Isle Royale Backpack:** (8th-9th gr) July 26-Aug 8: $1278

**Apostle Islands Kayak:** (9th-10th gr) July 26-Aug 1: $668

**Isle Royale Kayak Expedition:** (10th-12th gr) June 28-July 8: $1400

**Jr. Naturalists 2-wk Quetico Canoe:** (10th-12th gr) July 19-Aug 1: $1343

**Jr. Naturalists 2-wk Apostle Islands Kayak:** (10th-12th gr) Aug 2-15: $1343

**Family & Group Wilderness Trips:** Call for ages, dates, & prices

**Summer Family Camp:** (all ages) July 26-Aug 1, Aug 2-8: $390 5yrs-adult, $195 2-4yrs, 1& under free

**Road Scholar Intergenerational:** (8-12 yrs) July 5-10, July 19-24, Aug 9-14: Starting at $579

**Credit Camp:** (10th-12th gr) July 12-Aug 8: $2000

**Counselor-in-Training:** (10th-12th gr) Aug 2-15: $1200

**Jr. naturalists 2-wk apostle islands Kayak:** (8-12yrs) July 5-10, July 19-24, Aug 9-14: Starting at $579

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Wolf Ridge is an accredited residential environmental school for persons of all ages. We offer immersion programs which involve direct observation and participation in outdoor experiences. Wolf Ridge programs focus on environmental sciences, human culture and history, personal growth, team building and outdoor recreation.

Our mission is to develop a citizenry that has the knowledge, skills, motivation and commitment to act together for a quality environment.

We meet our mission by:
- Fostering awareness, curiosity, and sensitivity to the natural world.
- Providing lifelong learning experiences in nature.
- Developing social understanding, respect, and cooperation.
- Modeling values, behaviors, and technologies which lead to a sustainable lifestyle.
- Promoting the concepts of conservation and stewardship.