The Garden, A Master Teacher

Preface

When I was a child and the world seemed grim I had a place that I would go to and find myself again. I think, or hope, that most of us had such a place. Mine was deep in what I remember as a thick forest behind my home (though I later saw it was only a small grove of trees!). In that forest there was a tree that had all but fallen and was stripped of bark. I would climb onto the smooth horizontal trunk and teeter-totter recklessly in the enchantment of the woods. When I came down I felt that all was well again and even at five or six years of age I sensed that I knew who I was. My connections with nature have continued to root me, when the world seems grim. Everywhere I have lived I have found such places to go to and find what poet Wendell Berry calls “The Peace of Wild Things.”

The things that confound my being now, three decades hence, may on the surface seem quite removed from my childish troubles but when I am honest I find that they are not changed in substance, only in form. As a child I yearned for simplicity and was confounded by unnecessary complexities. This has not changed, though perhaps it has intensified. Yes, in truth it has. When I think on it I am sure that this one thing has become the struggle of my inner-world; to weed out complexity, to nurture simplicity.

The Question of Education

One of the complex questions I have been living is the question of education. This is a question that has grown within me from my own education in the public school system and now ripens as I have the stewardship of nurturing my own four daughters. For their sakes, I have waded through the war-zone of educational philosophies with the cross-fire so thick that I could not clearly see who was wrong or who was right. At last I came upon a place of peace, where Dewey, Montessori, Steiner, Mason, Rousseau and Froebel all seem to call a truce. I have found a place where public schoolers, home-schoolers, and private-schoolers can amicably co-exist. This higher-ground is in the garden. It seems that educational experts through the ages and across the globe have all cited the garden as a master teacher. In the garden we learn first-hand about nurturing and caring, patience and discovery, stewardship and respect, beauty and life. We also learn practical skills such as; mathematics, science, health and nutrition. Perhaps even more relevant today is the opportunity that gardening gives us to reconnect with nature. Research and

---

THE PEACE OF WILD THINGS

When despair for the world grows in me
and I wake in the night at the least sound
in fear of what my life and my children's lives may be,
I go and lie down where the wood drake
rests in his beauty on the water,
and the great heron feeds.
I come into the peace of wild things
who do not tax their lives with forethought
of grief. I come into the presence of still water.
And I feel above me the day-blind stars
waiting with their light. For a time
I rest in the grace of the world, and am free.

— Wendell Berry
anecdotal evidence tells us that when this connection with our natural world is established and nurtured, the child’s mind becomes centered and focused, eager to attack other areas of academia.

**Garden-Based Learning**

The modern term that describes the methods of experiential education as taught in a garden setting is “Garden-Based Learning” or GBL. Garden-Based Learning is not of course new. In its most primal forms it is older than the means to document it. Throughout the last century plus, the school-garden movement has ebbed and flowed in the United States according to trends in educational reform. During World War I, with many farmers called away, school children were actually relied on to help grow food for the nation. The most recent resurgence seems to have come about as an antidote to the rampant rates of childhood obesity, nutritional deficiency, and what author Richard Louv has poignantly termed “nature-deficit disorder.”

My own introduction to GBL came about through a teacher-friend who invited my daughter to attend a summer program with her daughter at the Life Lab Garden Classroom in Santa Cruz, California. To my delight I discovered that the Garden Classroom is one of those places......yes a place, like the teeter-totter tree in my forest, where you go and find yourself again. The Garden Classroom is set up on a hill where the sultry smells of the earth blend with the salt-mist smells of the ocean. You walk up the footpath and find yourself drawn in by trees and fields and cows and happiness. The children spent the week planting seeds, harvesting vegetables, cooking garden-food, composting scraps, watching worms, holding chickens, studying bees, sighting birds, singing songs and loving life. Watching my daughter alive with learning, I began to feel the inklings of the answer to the question I had been living for so many years.

Dewey: “Where schools are equipped with gardens ... opportunities exist for reproducing situations of life, and for acquiring and applying information and ideas in carrying forward of progressive experiences. .....they [gardens] are a means for making a study of the facts of growth, the chemistry of soil, the role of light, air, moisture, injurious and helpful animal life, etc. There is nothing in the elementary study of botany, which cannot be introduced in a vital way in connection with caring for the growth of seeds. Instead of a subject belonging to a peculiar study called ‘botany,’ it will then belong to life, and will find, moreover, its natural correlation with the facts of soil, animal life, and human relations ...” (Dewey, 1944)

The next year I sent two of my daughters to the Life Lab Garden Classroom program. My younger daughter, Olivia was only 6 ½ years old. I decided to enroll her because she had shown a peculiar, I thought, difficulty in surviving any formal school setting. As a three year old I withdrew her from preschool after two weeks because her attitude when I picked her up each day was dramatically sullen and filled with anger. In the first grade she insisted on going to public school. After three days of post-school raging and trembling episodes, I brought her home again with disconcerted wondering. That summer I sent her to
“Marco was a third grade student who recently moved to California from Guatemala. He came to the garden with a small group of classmates and a special aid. His shy disposition was not unusual for a visitor to the garden but I soon learned that the garden setting was not the reason for his shyness. While asking the children questions about the garden, identifying plants, recognizing scents and insects Marco’s classmates were quick to let me know that Marco has never spoken a word at school. We continued to tour the garden. We sat in the grape vine covered dome and ate our six plant part “burritos,” we looked at the composting worms and opened up flower seed heads. All along Marco seemed to gain interest, doing what all the other kids were doing. Then he found the strawberries. He stood by them and looked at me. I kneeled down to his level and picked one and motioned for him to do the same. He did. I said “fresa,” I said it again encouraging him to repeat me. A small fearful moment of silence passed then Marco said “fresa” followed by a faint smile. His aid was astonished, I looked over Marco’s head and saw her huge smile and tears in her eyes. That was the best strawberry I ever ate.”  

Martha Deichler, Principal of Borregas Springs Elementary School and avid school garden advocate, points out that though a garden curriculum has obvious benefits for children with such labels as ESL and ADHD, its fruits are for every child.

It seems that garden-based learning reaches into a very deep part of us, beyond all the things that divide a group and into our very humanity.

Where so many are trying to fight the educational “system” at a snails pace, GBL advocates have found a way to sustain reform from within existing walls. Garden advocates don’t have to contend against State mandated standards. Standards can be met in the garden! In California, there is even a free comprehensive guide to help educators connect garden activities with state standards. [http://www.cde.ca.gov/re/pn/fd/documents/childsgarden.pdf](http://www.cde.ca.gov/re/pn/fd/documents/childsgarden.pdf)
It takes commitment from the staff and parents and an openness to see things in a new light but success stories are sprouting up in many school gardens around the country. The great news is that for those wanting to get started the groundwork is already in place. A thriving school-garden program is something that can be done now to make our schools a more nurturing and healthful place for our children.

I say “thriving” because not all schools that claim to have gardening programs are reaping the fruits of what a garden program can be. One friend of mine, who is a retired teacher as well, confided her frustration after volunteering in her first grader’s school garden. She spent hours preparing the plot and gathering supplies and was excited to spend time in the garden with the children. Her disappointment came when she was instructed to lead the children in groups to the garden where they would each plant a bulb and then line up to wash hands and return to the classroom. She was given 20 minutes total with each group, which when you consider the time it takes to line up, walk to and from, and wash hands is desperately insufficient for any real impact.

The desire to implement a life-lab program must be more than a token gesture given to make a school appear well-rounded. It should stem from the conviction of what garden-based learning is. When that conviction is present, the path will be cleared to sustain the program. There is no one way to manage a school garden. Successful School Garden programs come in as varied shapes and sizes as the things that grow in them, however there are certain components that seem common to each. The Life Lab Science Program maintains the following helpful definition:

**A Life Lab Garden is a place where students...**

- Are inspired to ask questions and seek answers through their own research and observations.
- Observe the workings of a diverse ecosystem first-hand
- Recognize their ability to create a place of beauty and ecological significance.
- Discover the connections between themselves, their peers, and the natural world.
- Contribute to the production of healthy food, from seed to table.
- Apply concepts learned in multiple academic areas.

A garden in every school is even more essential to make our standards come alive. We must not lose the creativity, problem solving, and sheer love of learning that comes from hands-on, experiential learning. Gardens should not compete with our standards; gardens should be an avenue to high standards.

---DELAINE EASTIN

*Former California State Superintendent of Public Instruction*
A Life Lab Garden is a place where students are inspired to ask questions and seek answers through their own research and observations:

Throughout so much of their day children are being told what to think. In the garden, as with all experiential learning, children learn HOW to think. Carol Hillhouse, Director of the Children’s Garden at UC Davis and mother speaks from experience when she tells me that “Children are led by the magic of discovery. This discovery-mode is intrinsic to a child’s development.”4 One of the first things that a garden-educator will do when bringing the children into the garden is to give them time (ahhh the gift of time) to explore. Martha Deichler begins her garden sessions with an invitation to “Look around and see what you see. See what has changed since last week when we were here.” The children sometimes become so enthralled by discovery, says Deichler, that this becomes the entire lesson. There is so much happening in the garden.5

A Life Lab Garden is a place where students observe the workings of a diverse ecosystem first-hand

While giving elementary school students a tour of Life Lab’s Garden Classroom on the campus of University of California Santa Cruz, Life Lab interns find many opportunities in the garden to incorporate lessons about ecological interactions. As they travel through the garden out on the farm, students often notice the large rectangular boxes on tall poles that were constructed as habitat for nesting owls. Through exploration and observation, students can discover how the owls connect to the larger ecosystem. On one bright spring day, Erik guides his group towards an owl box perched above a curling mass of tendrils and spring green kiwi leaves trellised on the far end of the garden. In a hushed tone, Erik explains how the owls are nocturnal and use the daytime hours to rest. “We should be extra quiet while we explore”, he whispers to his captivated students. Crouching low under the kiwi trellis, Erik leads his students towards the grass at the base of the owl box searching for owl pellets. As they follow him into the shade of the kiwi vines, the students converse in soft whispers. “Is this an owl pellet?” one student asks Erik in a hushed whisper, pointing to an unassuming lump of hair on the ground. Erik explains how the hair and bones in each pellet provide pieces of information about the owl’s diet and activity. Erik has his group circle around this piece of evidence while he questions his students to figure out the owl’s role in the farm ecosystem.

---

**Children live through their senses. Freedom to explore and play with the outdoor environment through the senses in their own space and time is essential for healthy development of an interior life.** – Robin Moore, National Learning Institute

**Elementary school and junior high school students gained more positive attitudes about environmental issues after participating in a school garden program. Walczek, T.M., Zajicek, J.M. (1999).**

“Gardens are often the most accessible places for children to learn about nature’s beauty, interconnections, power, fragility, and solace.” Heffernan, M. (1994).

Both passive and active interactions with plants during childhood are associated with positive adult values about trees. However the strongest influence came from active gardening, such as picking flowers or planting trees as a child. Lohr, V.I. & Pearson-Mims, C.H. (2005)

Gardening has been shown to increase scores on environmental attitude surveys of elementary school children. Skelly, S. & J. Zajicek. (1998).
“What do you think this owl eats?” Erik asks his group. One student ponders the bones and guesses “something small…a mouse!”

Erik replies, “Right on! I would guess that this rodent might very well be a gopher, which is like a mouse; they’re both rodents. Now what does a mouse or a rodent like a gopher eat?”

Students guess plants and seeds and Erik replies, “Yeah! Take a look around the garden…are there lots of yummy plants here that a gopher might eat? Have we seen any evidence of gophers in the garden today?”

A student remembers that one of the carrots they pulled from the garden had tooth marks on it. Another student volunteers that he can see tunnel holes from gophers all around us. Erik then explains that since the garden is organic, the farmers here use many alternative methods of pest control rather than using chemical pesticides, including the creation of owl boxes to increase potential owl habitat. The owls, in turn, will help curb the local population of small rodents. As the tour goes on, Erik can point out to his group the gopher snake habitat and the hedges around the garden that provide habitat for many different animals; birds who eat insects, insects who pollinate plants, bobcats and coyotes who hunt gophers and rats in the garden. The garden provides many living examples of the intricacies of predator prey dynamics waiting to be discovered by young students’ curiosity.

A Life Lab Garden is a place where students recognize their ability to create a place of beauty and ecological significance.

Maria Montessori (1870-1952), also saw the educational value of gardening. Montessori, who developed the Montessori method of education, believed that children should first receive an “education of the senses, then an education of the intellect.” In addition to awakening their senses, Montessori stressed the importance of gardening in teaching children to appreciate nature as well as to develop a sense of responsibility and purpose. She wrote, “When [the student] knows that the life of the plants that have been sown depends upon his care in watering them…without which the little plant dries up…the child becomes vigilant, as one who is beginning to feel a mission in life.”

This is huge. Our children are so catered to, protected, and aware of things they can not do for safety reasons, they are eager for responsibility. Hemenway wrote, “[the] school garden creates a love for industry, a love for country, for nature and things beautiful, and makes boys and girls stronger, more intelligent, nobler, truer men and women.”

Caprice Potter, the Life Lab Science teacher at Gateway School in Santa Cruz, California, shares this story:

At Gateway School, students who love the garden class often choose to join the Garden Club, a voluntary group that comes to the garden during lunch recess to plant and tend to their own, small pot of land. Hannah (name has been changed), a
third grade student, couldn't wait to join in the third grade. She wanted to plant a succulent garden.

When Hannah joined Garden Club, she immediately started propagating succulents, bringing in plants from home, putting leaves in the ground and in pots. Other students, attracted by her garden, started bringing their own plants from home to add. By 5th grade, Hannah had a very mature and beautiful succulent garden, and she began to break off pieces to give to younger students to propagate. During this time, ten year old Hannah wrote the following poem:

_Garden Magic_

_The magic at school is mostly in the garden because all of us are working together and this is what we all created. A place where odd stripy plants called gourds hang down from an arbor. Each one is different; some are long, some stubby, some plump and some skinny. Kind of like people, each one is special and magnificent in its own way._

_A place where the birds are friendly, and the frogs croak happily, and the plants go skyrocketing, determined to reach their destiny._

_Somewhere where you can always feel safe. Some place where life is born into the world. Somewhere where the wind plays a soft and sweet song on that lovely harp hidden in the clouds._

_Listen do you hear it? The birds join in the song creating an orchestra._

_In every direction there is beauty to look at. Passion vines creep along the fence with red passion flowers to accompany them. Tall sunflowers tower above my head._

_And that’s the magical place that we all created together._

Hannah is "special and magnificent" in her own way as well. She has a rare disorder that keeps her from doing many physical activities. Despite this obstacle, Hannah is still pursuing her passion for gardens. After graduating from Gateway, she often returned to visit and volunteer. Now, almost twenty years later, Hannah is working in Oaxaca, Mexico on an organic farm and animal sanctuary.

_A Life Lab A Life Lab Garden is a place where students discover the connections between themselves, their peers, and the natural world._

Connections to real people and events are what experiential education is all about. Studies in Sweden, Australia, Canada, and the US, found that a more natural schoolyard encouraged more fantasy and make-believe play in particular, which provided ways for boys and girls to play together in more egalitarian ways. Another finding was that children showed a greater sense of wonder.
Studies have shown that fifth, sixth, and seventh grade students developed better interpersonal relationship skills after participating in a garden program.\textsuperscript{13}

Studies in Bexar County, Texas showed that school gardening increased self-esteem, helped students develop a sense of ownership and responsibility, helped foster relationships with family members, and increased parental involvement.\textsuperscript{14}

Martha Deichler’s observations support these findings. She says that there is a marked difference between the interactions of children in the garden as opposed to otherwise. “Something subconscious happens in the garden,” says Deichler, “which encourages children to cooperate without regards to gender, age, or race. It’s very refreshing.”\textsuperscript{15}

\textbf{A Life Lab Garden is a place where students contribute to the production of healthy food, from seed to table.}

In the simple act of nurturing a garden a consciousness develops within the child about our connection to the sun, soil, water, and air. Even a “picky eater” will happily graze in the garden and develop positive attitudes toward fresh fruits and vegetables. This consciousness also spills over to the administrators and parents involved and the school lunch program is often influenced.

Some schools have been so successful with their gardens that they have been able to substantially contribute to the school lunch menu with fresh fruits and vegetables. Pacific School in Davenport, CA has piloted a program called “Food Lab” where the whole school contributes to the success of the Life Lab Garden and the fifth and sixth graders rotate time in the kitchen each day preparing wholesome school lunches using the garden harvest and other local produce. The kids literally eat it up! They think that they are getting out of class when they go to Food Lab. They are having so much fun that they don’t realize they are learning math and science as well as important life skills, like planning a balanced menu and chopping vegetables.

Stephanie Raugust, Nutrition Coordinator at Pacific School says, “With Food Lab, what we produce in the school garden is directly related to our daily menus. We use the garden harvest in a planned manner for the meals prepared at the school. It’s a natural evolution of the Life Lab Project.” Stephanie also reports that the children gain a confidence in the kitchen and are eager to help out at home. They also learn to make informed choices about what they eat.\textsuperscript{16}
A study on a youth gardening program in Detroit reports that after gardening, kids have an increased interest in eating fruit and vegetables, possess an appreciation for working with neighborhood adults, and have an increased interest for improvement of neighborhood appearance. In addition, they made new friends, and showed increased knowledge about nutrition, plant ecology, and gardening. 17

**A Life Lab Garden is a place where students apply concepts learned in multiple academic areas.**

Recent studies continue to support the positive impact of gardening on academic performance. Third, fourth, and fifth grade students that participated in school gardening activities scored significantly higher on science achievement tests compared to students that did not experience any garden-based learning activities. 18

George Washington Carver wrote the following based on his experiences with school gardening at the Children’s House, an elementary school on the grounds of the Tuskegee Normal and Industrial School (later renamed Tuskegee University):

>“Nature study as it comes from the child’s enthusiastic endeavor to make a success in the garden furnishes abundance of subject matter for use in the composition, spelling, reading, arithmetic, geography, and history classes. A real bug found eating on the child’s cabbage plant in his little garden will be taken up with a vengeance in his composition class. He would much prefer to spell the real, living radish in the garden than the lifeless radish in the book. He would much prefer to figure on the profit of the onions sold from his garden than those sold by some John Jones of Philadelphia.”19,20

Mary Thomas, a Kindergarten teacher at Green Acres Elementary in Live Oak, California has a personal passion for gardening. Her classroom has a door that opens right into the school’s Life Lab Garden where she takes her restless kindergarteners to teach them hands-on lessons in science and math. After the half day of Kindergarten is finished Mrs. Thomas works with first-grade students one-on-one as a reading recovery specialist.

>“Before our reading-recovery sessions I walk with each of my students through the garden. We notice things that have changed from our last visit. We smell fragrant herbs and feel the fuzzy lamb’s ear or the silkenness of a chestnut. These short walks relax the students and help them to focus. There is no question that it helps them perform better in our academic sessions. The garden calms them, and me, as if to say “it’s okay, keep at it and you will get it. Everything blooms in its own time.” The garden teaches me that children, like seeds, can’t be rushed to grow; only nurtured.” 21
Conclusion

"We've been sold a bill of goods -- especially parents -- about how valuable computer-based experience is. We are creatures identified by what we do with our hands.” As Wilson sees it, we are cutting off our hands to spite our brains. Instructors in medical schools are finding it increasingly difficult to teach how the heart works as a pump, he says “because these students have so little real world experience; they’ve never siphoned anything, never fixed a car, never worked on a fuel pump, may not even have hooked up a garden hose. For a whole generation of kids, direct experiences in the backyard, in the tool shed, in the fields and woods, has been replaced by indirect learning, through machines. These young people are smart, they grew up with computers, they were supposed to be superior -- but now we know something's missing.”

I think there is a viable parallel between “living foods” and “living education.” We know how important it is to eat significant amounts of raw fruits and vegetables. Nothing feels as healthy as something that was just picked from the vine, still warm from the sun and pulsing with life. Eating living foods provides our bodies with enzymes that are not present when the same food is processed. No matter how you package it or label it, packaged food does not, can not, nourish us the way living food does. We must make a conscious and concerted effort in our daily habits to say no to the urge to fill our hole with prepackaged, watered-down and altered versions of food. Likewise, we must be choosy about how we feed our minds and the minds of our children. Let us choose methods of living-education whenever possible and avoid watered-down, packaged, processed, disconnected-from-the-source versions of learning.

It occurs to me, as the first-grade teacher sends home a thick stack of packaged worksheets home for the education of my six year old, that there is a disturbing parallel between the emotional atmosphere of the cafeteria and the classroom. The processed food labels assure that it is providing the appropriate nourishment. X amount of protein and X amount of calcium, and even fortified with X amount of vitamins…..but on a cellular level you know that this isn’t really food; not if you’ve ever eaten anything straight from the garden. Similarly even though packaged education may provide the results needed to pass state tests, on a basic level you know that this isn’t learning; not if you’ve ever watched children at work in the garden ; When you see that everything else is secondary. You see eyes wide with excitement of discovery. You see connections being made. You feel….hmmmm….. reverence. And so do they. The children get it. They get the importance of what happens in a garden. They are starving for someone to trust them with more than a bean-sprout in a Dixie cup. They are starving for stewardship.
As a mother who lives daily this question of education, I rejoice that there are so many people out there living the answer. Researching this article has filled me with hope and resolve. We must do all that we can to preserve and build the enchanting power and practical life-force of gardening in the education of our children. Much of what lacks in education I believe can be harvested in the soil of garden-based learning.

I know it sounds simple. Frankly, it is. Not easy, but simple. Weed out complexity, nurture simplicity.

Life Lab Science Program is a national leader in garden-based education. Life Lab, founded in Santa Cruz, California in 1979, is dedicated to developing and using school gardens as “living laboratories” where which students can integrate and apply what they are learning in the classroom. Life Lab has trained tens of thousands of educators in science, math, language arts, visual arts, and environmental education in the garden. Hundreds of thousands of Life Lab's garden-based activity guides and curricula have been sold nationwide. Life Lab hosts over ten thousand students and educators each year in their Garden Classroom for workshops, field trips, summer camps, and youth internships. To learn about Life Lab and their 30th year anniversary celebration, visit www.lifelab.org.

Author Kirsten Berhan lives with her husband, four daughters, and 16 hens in Rio Del Mar, California where they own an environmental and safety consulting business. Kirsten takes to heart Charlotte Mason’s suggestion to spend at least two hours daily out of doors with the children. Kirsten writes many checks and lunchbox notes and occasionally she puts her pen to work for something she is impassioned about.

---

1 Fisher, J. E-Mail October 2007
3 Deichler, M. Phone Conversation October 2007
4 Hillhouse, C. Phone Conversation October 2007
5 Deichler, M. Phone Conversation October 2007
6 Grinvalsky, J. Email to John Fisher October 2008
17 Potter, C. E-Mail to John Fisher October 2008
15 Deichler, M. Phone Conversation October 2007
16 Raugust, S. E-Mail and Phone Conversation January 2008
21 Thomas, Mary. Personal Interview July 2008