

Agricultural Education in an Elementary School: An Ethnographic Study of a School Garden

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Abstract

The purpose of this study was a phenomenological understanding of the impact of an agricultural education garden-based curriculum on the students and teachers of an elementary school in the Midwest. Specifically this study was an exploration of our children's relationship to land and food and what it might offer teachers struggling to engage students in the learning process. A philosophy supporting emergent, participatory inquiry was developed and sustained for this project. Research participants were encouraged to fully engage in the identification of important issues, questions, planning and vision for the garden. Sensitivity to local knowledge and appropriate methods became guiding principles of this project. Data were collected utilizing multiple qualitative methods including: participant observation, dialogue, interviews, photo elicitation, and student work. Data were content analyzed following Lincoln and Guba's (1985) adapted constant comparative method for use in naturalistic inquiry. Data analysis was highly recursive, informing and increasing the sophistication of the inquiry. Appropriate criterion for validity and authenticity of this study were developed which included: catalytic validity, triangulation of data, reflexivity, and grounded understanding. The write up of this study took the form of an ethnographic case study. Findings and conclusions from this ethnography included: 1) an agricultural education garden is a potent force in re-shaping school culture; 2) an agricultural education garden is a leverage point for reversing the loss of time, control and place in teachers' and students' lives; 3) the agricultural education garden connected students to the organizing principle of experience; 4) the agricultural education garden became an important place for teachers' and students' self-expression, creativity and innovation, 5) agricultural education gardening activities changed the status of food as a commodity for consumption to a portal for communal good.

Introduction

This study is an exploration of our relationship to the land and what it might offer agricultural educators struggling to engage children in the learning process. But it is a bit more than learning processes alone. For if we view education as a cultural template for the next generation we must then ask, to what extent do we as agricultural educators abet the human-nature separation and concomitant fragmented worldview that threatens our very existence? The question then becomes, what is the potential of this powerful living force to *sustain and connect* our children mentally, physically, and socially in our educational institutions?

Researchers have been examining this question of human-nature interaction in a concerted effort since the 1970s under the umbrella of horticultural therapy, sociohorticulture, and environmental education (see for example, Kahn (1999); Kaplan & Kaplan (1983); Lewis (1979); Sheffield (1992)). Studies from these disciplines have demonstrated with varying degrees of success that gardens provide a useful venue for experiential learning both

academically and developmentally. These studies establish a foundation for the justification of further inquiry, yet questions remain that cannot be answered with conventional measurement and experimental design. Something significant occurs between plants and people that cannot be captured with quantitative evaluation alone. Constructivist methodologies may help us gain an understanding of the garden that is deeply embedded in the stories teachers tell, the language children use, the culture of the school, and the historical context of this study.

Purpose of the Study

The purpose of this study was a phenomenological understanding of the impact of an agricultural education garden-based curriculum on the students and teachers of a midwestern elementary school. The qualitative methodologies of dialogue, participant observation, prolonged engagement, and reflexive field notation were used to contribute an alternative form of knowledge construction to the existing body of research concerning school gardening as agricultural education. A philosophy of *praxis* or reflective action, was foundational to the purpose of this study, whereby research participants were empowered to become more aware of agriculture and life sciences and are afforded greater agency to act upon this knowledge in their social settings.

Statement of the Problem

An elementary school in the mid-west was struggling with declining standardized achievement test scores. Although various sorts of interventions were suggested in the literature (Kohn, 1999) and have been implemented at the school to deal with this situation, few seem to work. Therefore, the problem for this study was to discover how agricultural educators might re-connect students to school via a garden.

Research Questions

Acknowledging the aforementioned research problem, the following questions were designed as specific points of entry to this study:

- Research question 1: How does a school garden affect students? The goal of research question #1 was to gather interview and observational data regarding any changes (academic, attitudinal, social, etc.) that may occur as students use the school garden.
- Research question 2: How does a school garden affect teachers? The goal of research question #2 was to gather interview and narrative data concerning any changes that may occur as teachers use the school garden.
- Research question 3: Which lessons/activities in the garden are perceived as useful to facilitate learning? Likewise which activities were not useful to facilitate learning? The goal of research question #3 was to gather data from both teachers and students regarding the garden-based curriculum and its effectiveness in meeting state science standards and objectives.
- Research question 4: What if any constraints limit or undermine the use of the garden? The goal of research question #4 was to identify any barriers or impediments that prevent the effective use of the garden by students and teachers.

Theoretical Framework

Human development coupled with environmental awareness or connection with nature is a theory repeatedly emerging in the literature from as far back as the eighteenth century. Rousseau (1950) and Pestalozzi (1977) both argued that direct sensory contact with the natural world during childhood was critical to the healthy development of children. This bears striking similarities to more contemporary pedagogies of place found in the literature. Developmental theorist, Jean Gebser (cited in Chowla, 1994) worked out human development based on what he termed primeval trust or confidence in our relationship with the processes of nature. Pearce's (1977) model of development suggests that children enter a stage from ages seven through fourteen when the child's "safe place" or "significant world" is the natural world. During this time, called the "earth matrix" the individual is most at home and gains strength from places outside the home in nature. This bond, which is essential for healthy maturation into the next stage of development, is created in the process of close personal experience with the earth.

Peter Kahn (1999) has proposed a structural-developmental or constructivist approach to this question of development. Kahn theorizes the human relationship with nature is in fact a combination of both endogenous (innate wisdom or genetic) and exogenous (experientially stimulated) forces. He suggests the need for transformative learning processes that empower children to construct their own values and truths about the natural environment. Central to Kahn's thesis is a movement toward increased student involvement in shaping curriculum based on their interest or fascination with nature. Rachel and Steven Kaplan (1989) have contributed a wealth of research findings regarding the restorative benefits of gardening or what they have termed "nearby nature. Kaplans suggest that fascination with nature holds substantial potential psychologically. The importance of this concept lies in its restorative ability to achieve cognitive clarity for those involved in gardening. Kaplan and Kaplan found yet another particularly intriguing byproduct from gardening that merits consideration, people that garden experience a "sense of control" in their efforts. From a psychological standpoint "sense of control" is especially important for individuals that routinely experience a loss of control in their lives. McNally (1990) made similar conclusions in her studies of people's valued places. McNally's respondents consistently mentioned the garden as, "a place to depend on and participate in" (p.173). Charles Lewis (1990) has written and documented gardening as a healing process for well over two decades. A healing transformation can occur at the level of the individual or at the much broader level of community. Wendell Berry (1977) has written calling for a broader concept of health that reunites not only our mind and body, but also our communities through localized agriculture.

Currently, most public schools are driven by performance on state and national academic achievement tests. With the present resurgence of a "back to basics" or technocratic approach to education there is ever increasing pressure to streamline curriculum in an effort to serve economic or market driven goals in education. Proponents of the gardening movement in schools have only begun to reflect the pressure to demonstrate improved academic performance in the design of their research and curriculum. Ogorzaly (1996) reports the most telling illustration of this single-minded focus on test scores in her study with third-graders. Ogorzaly's innovative research involving gardening and cooperative learning was the recipient of the 1994 Presidential Environmental Youth Award, yet the following year a new program was chosen to

replace gardening because of its purported ability to raise test scores. Sheffield (1992) and Brunotts (1998) claim improved academic performance as a result of school gardening programs, yet these claims are marginal upon close inspection of the studies. In a three-year study of classroom gardening involving 300 students, Hendren (1998) was unable to report any significant difference in academic achievement as a result of the gardening program utilized. Overall there is a scarcity of empirical evidence in the literature describing any significant correlations between gardening programs and academic performance.

Methodology

Emergent design is axiomatic to naturalistic inquiry (Lincoln & Guba, 1985). For, as the authors state, “it is inconceivable that enough could be known ahead of time about the many realities to devise the design adequately” (p. 41). With receptivity to the emergent nature of phenomena we shift from product orientation to a process orientation. The research design becomes nimble, adaptable and exquisitely finessed to the local context of the study.

Sampling Procedure

Purposive sampling (Patton, 1990) was utilized to locate informants willing to converse about their experiences with the garden and garden-based curriculum. The power of purposive sampling is situated in its ability to ground the inquiry in emic views of local respondents. Typical of a qualitative study, this project focused in-depth on a relatively small sample of 5 teachers and 40 students from one school.

Data Collection Methods

Data collection was carried out utilizing multiple qualitative methods, including: interview, conversation, observation, photo elicitation and document analysis. These methods were selected because of their fit to the phenomenon of study.

Interview and Dialogue

Unstructured and semi-structured interviews were a source of data throughout the course of this study. Interviews were intermittently scheduled throughout the 2000-2001 school year. All interview participation was strictly voluntary, and respondents were informed of their rights as human research subjects prior to any interview through the use of a consent form. Protocols for both student and teacher interviews were developed based on the research questions for this study. The protocol is a tentative set of questions that will set in motion a recursive flow of information through participants in this hermeneutic process. Student interview protocols were collaboratively developed with the teachers participating in this study. This collaborative effort allowed teachers to participate in a process through which new evaluation practices (i.e. locally constructed rubrics as opposed to nationally developed normative standards) might be established, refined, or sustained. Initial interviews were unstructured, allowing for respondents to make known their constructions of the garden unrestricted by my prompts. As trust was gained and emic constructions began to take form, the interviews became more structured, tracing the patterns of the emerging hermeneutic circle. Built into the hermeneutic process is

the possibility for triangulation, emendation, reconstruction, and verification of data (Lincoln and Guba, 1985).

Participant Observation

Extensive field notes were collected from participant observation during the researcher's year on site at the elementary school. Guba & Lincoln (1981, p.193) state that the basic methodological arguments for participant observation may be summarized as these: "[O]bservation maximizes the inquirer's ability to grasp motives, beliefs, concerns, interests, unconscious behaviors and the like. Observation allows the inquirer to see the world as his subjects see it, to live their time frames, to capture the phenomenon in and on its own terms, and to grasp the culture in its natural, ongoing environment."

Documents

Documentation (written or recorded material not prepared specifically in response to a request from the researcher) also served as a source of data in this study. Lincoln and Guba (1985) detail the usefulness of documentation to include: stability of information, contextual relevance, richness of information, natural language of the setting, and finally, documents are non-reactive. Student garden journals, maps, stories, poetry and artwork were collected and interpreted for insights into the garden experience of the children.

Photographic images

Douglas Harper (2000) in describing photo elicitation as an underutilized qualitative method encourages researchers to construct a "visual narrative." These visual images encourage readers to take a closer look at the small social worlds of our inquiry. Visual imagery adds a layer of complexity to our texts and representations pointing at specific moments of human interaction. I found that photographing the teachers and children during their participation in the project was one of the least obtrusive and most "natural" methods of data collection available to me. Photographing became *a culturally acceptable method* of data collection at the research site.

Naturalistic Data Analysis

Data analysis in this study followed naturalistic data analysis guidelines as described by Lincoln and Guba (1985). Naturalistic data analysis differs from conventional analytic methods in that it is carried out throughout the entire course of the study. Naturalistic data analysis is not a linear process; rather, it is a highly recursive function. In using this method questions are developed, data is gathered, questions are refined, more data is gathered, data is analyzed, increasingly sophisticated questions are posed, more data is gathered, and so on. As one can see, the process has a built in mechanism for self-correction and validation.

Content Analysis

Lincoln and Guba (1985) adapted Glaser and Strauss' (1967) constant comparative method for use in naturalistic inquiry. It should be noted this process was developed by Glaser

and Strauss for the development of theory, not simply processing data. Lincoln and Guba suggest the term “construction” be substituted for “theory” in adapting this method. Use of content analysis followed the stages based on Lincoln and Guba’s strategy: unitization of data, comparing units for categorization, memo ideas, integrating categories and their properties, delimiting the construction/theory.

Credibility and Trustworthiness Criteria

It is important to judge the quality or validity of phenomenological inquiry by standards appropriate to the paradigm. The following criteria were used to evaluate the trustworthiness of this study:

Catalytic validity. Research is judged by the “degree to which the research process re-orient, focuses, and energizes participants” (Lather, 1986, p. 67).

Triangulation. The authenticity of constructivist inquiry is reinforced by seeking multiple data sources, methods of data collection, and theoretical schemes (Lather, 1986; Lincoln & Guba, 1985).

Reflexivity. As a standard for evaluating quality, Richardson (1999) explains that in qualitative and ethnographic texts we offer critical reflexivity about our role as researcher in the research context as a valuable analytical practice. Persistent reflexivity indicates how our working theories have changed by the logic of the data gathered along the way.

Understanding. Harry Wolcott (1994) describes that in understanding he seeks “a quality that points to identifying critical elements and wringing plausible interpretations from them” (p.366). Yet he cautions that there is never a single, exact set of circumstances with a “correct” interpretation. Similarly, Richardson (1999) asks if our work contributes to an understanding of social life from a grounded or “embedded” perspective.

Case Study

Introduction

Consistent with the research reporting form for qualitative research, this case study is reported in first person with “thick description” (Geertz, 1973) of the research site and participants an integral part of the report. The headings for the case study identify major themes revealed in the researcher’s findings.

Background

As you will soon see this is a story about moments of becoming, and wonder and connection at a small elementary school in the mid-west. Traveling the rural road out to Jonesville School for my first day on site I am struck by the pastoral beauty of the farmland that surrounds the school. Strip malls and commercial enterprises of the city give way to tidy homesteads, cornfields and wide-open vistas. Paradoxically though, the children of this school are not farm children. This “outpost” (a term frequently used to describe Jonesville) of the

district actually serves three decidedly urban neighborhoods in the surrounding community. Children are bussed in from the inner city and two low-income mobile home neighborhoods. As a result, much to my surprise, the school population is an ethnically diverse mix of African American, Hispanic, Asian, Arabic, and Native American. District-wide over forty languages and dialects are spoken. Teachers proudly tell me, 'this is our strength' and it truly is one of their many strengths. Yet this glorious strength comes at a mighty price for these are the faces of poverty; 58% of the 260 students are on the Federal Free and Reduced Lunch Program. This number I have come to find out is a powerful number in the education business. Kristy, one of my key informants looked me dead in the eye "That number is very telling you know," I shake my head, no I don't know, "Alfie Kohn (a noted educational researcher) can look at that number and tell you within a few percentage points what your standardized assessment scores will be. There is a direct correlation between privilege and test scores." "So why bother," I wonder aloud marveling at teachers' perseverance to perform against losing odds "Right." Kristy agreed, "Why bother? And here is the kicker, Kohn (1999) admonishes us as teachers *not* to try and beat these odds, because he says if we do happen to pull our scores up slightly that means we are teaching to the test and deep, meaningful, learning has been abandoned." And yet, after only a few days at school I saw that deep, meaningful learning had *definitely not* been abandoned by these dedicated, and caring educators. In fact, Jonesville School prides itself in its unique educational philosophy within the district. Jonesville teachers have made a commitment to a multi-age or "streaming" approach to learning. Here children are grouped K-2, 2-3, and 4-5 (these groupings are not fixed, they change according to the needs of the school population) shifting the focus away from annual promotion to a child's unique readiness. There is an ethos of student-centered learning that pervades throughout the building. Sadly, though, bubbling just below the surface of this marvelous environment of caring I see and hear strains of fear and anger at our current system of schooling.

The Culture of Schooling

In an effort to chase improved standardized academic achievement scores, curricular change has become constant. Betty, a seasoned veteran of 22 years in the district muttered under her breath to me, "Mandates and change, we are faced with this constantly. Eventually, I don't know, three years, five years, ten years down the road you just shut down. You go back to your room, shut the door and teach from the basal." Overhearing this comment Gloria leans forward and tells me their union is writing a response to the district concerning curricular change.

"Accountability is big! Our product is our test scores." Kristy explained. The Superintendent of this school district uses what was referred to as a "corporate model" of management. One can easily see how conflicted the teachers feel about the values that surround this ethos. The teachers understand the constituent unrest concerning education that this new Superintendent finds herself, yet these dedicated teachers are hesitant to play the numbers game. Playing the numbers game is a constant balancing act for the principal of Jonesville. Pat has a healthy respect for these numbers as principal of this "underperforming school" yet she provides a strong counterbalance to the oppressive district obsession with numbers. A powerhouse of positive energy, Pat has lead her teachers through threats of school closure, shrinking budgets, staff reduction and constant pressure for numeric success.

As an underperforming school, Jonesville is all too familiar with the promises from the current interventions touted in the education literature. Jonesville teachers were highly skeptical and defensive of promises to improve their academic ‘report card.’ One afternoon while talking with Kristy, one of my key informants, she said, “Do you know we currently have a three year attrition rate!”? When I asked her why this was so she replied, “[It is] due to isolation, to the increasing needs of our children and to state and district demands.” Her voice trailed off wearily gazing at the usual 4:00 pm chaos of the classroom, finally landing her focus on the piles of paperwork on her desk as if to say, “Would you last three years at this?”

The Grace of a Garden

To say that this school was badly in need of something to crow about or a source of pride is a start, but I am now convinced that pride is only half of the story. The garden created a space amid all the turmoil for us to feel graced. This state of gratefulness was a critical foundation for the success of the garden. The teachers, staff and children were able to view the world through a different window because of the garden. They were able to feel blessed rather than cursed. By late August and the advent of a new school year, the garden had exploded into a cornucopia of flowers and vegetables. The garden was bursting at the seams and so were we with pride in our accomplishment; this year there was a garden instead of a prairie! Faculty and staff all agreed we needed to contact the local newspaper and share our accomplishment with the world. After arranging for a reporter and photographer to visit Jonesville an interesting thing happened, we all started talking about the “story” we wanted to tell. Did we want to tell about our amazing crop of tomatoes and our homemade salsa? Did we want to tell about our incredible, giant pumpkin or our sunflower jungle? As an ethnographer this would be a story within a story. What would they deem as important in the telling of the garden story? Their answer emerged from the garden. By this time, the second week in September, our turnip crop was literally begging to be pulled from the ground. These were no ordinary turnips, mind you, these were “great, big, giant, enormous turnips.” It was brought to my attention by Carol that a children’s book had been written telling a story of teamwork, cooperation, and communal nourishment around the removal of a giant turnip from a farmer’s field. *This* was the story Jonesville School wanted to tell. At the appointed hour we all lined up (hands on waists just as in the story) and *together* we pulled our giant turnip—POP, click-- for the reporter and photographer. This little bit of positive recognition empowered this “underperforming” school to author a new story. A story not based on performance but on hope, and beauty, creativity and community. The amazing growth of a 59¢ packet of turnip seeds had empowered these teachers and children to have a voice in a system where it is mighty difficult to be heard.

We Enjoyed the Creativity

Affirmed by the success of the giant turnip emergent lesson, Carol and Gloria continued to look to the garden for inspiration in their planning. These confident and experienced teachers saw the living dynamics of a garden as a perfect match for their philosophy of teaching and learning. Explaining that real learning is difficult to plan, Gloria said to me, “We often ‘plan’ after the fact, or ‘plan’ as we go.” Chuckling Carol added, “Gloria and I call this planning in the doorway.” And isn’t this the nature of all knowing and inquiry? I saw this in my own attempts

to plan this research project; I was now letting go of my “plans” and developing a situated methodology or “plan in the doorway.”

My collaboration with Gloria and Carol has been one of the most rewarding experiences of this project. The creative lessons we have generated together throughout the year have now grown into an entire immersion literacy process lovingly referred to as: “Books We Have Eaten.” Attempting to describe how this process evolved Gloria mused, ‘Food emerged in the garden, we found a literature connection, we designed a lesson, we cooked, and finally we hooked it to the curriculum.’ Nature drove the process not the curriculum guide; we had turned the system on its head. The garden-based learning activities naturally emerged; advance planning would have changed the dynamics, ignoring the interest and curiosity of the teachers and students. Giving us a curriculum makes it a requirement. We enjoyed the creativity of asking, ‘How can growing pumpkins be a literacy activity?’”

This Has Gone Cross Curricular

Stephen Toulmin (1982) reminds us to see disciplinary boundaries as historical “accidents.” Witnessing the strain against these accidental boundaries in my work with the teachers and children of Jonesville, I have come to believe that the garden is a portal through the confines of disciplinarity. Corn seeds, ladybugs, children and pumpkins know nothing of these artificial confines. Elementary school teachers also feel closer akin to a way of knowing that cannot be subdivided into tidy categories. During a conversation I had with Carol she explained her frustrations with the current mandated curriculum, “We work with isolated content (math, science, social studies, language arts) that is handed down and treated like secondary—separated content areas. The garden helps us draw connections across the curriculum, it is material to scaffold.”

The Garden as a Place of Connection

The data speaks very clearly to the garden as a place for connection: connection to each other, to food, to place, and surprisingly to me. I witnessed the common unity—community—that happens when people work side by side towards a shared vision. The garden became a place of connection because it operates according to different rhythms. You cannot hurry a garden, it is beholden to a temporal pace unaffected by human clocks and schedules. Stepping out of the classroom and into the garden one enters a place of slow rhythmic continuity. For our children the garden offers an alternative to the discontinuity and fragmentation of our modern culture. Questions of personal gain versus collective good seemed to slip away in our garden ecosystem. Released from the culture of separation and personal ambition that is transmitted in schooling, the Jonesville students reveled in the freedom to work together for communal good. The school-wide enthusiasm generated by the garden reminded one teacher of “the feeling experienced long ago when communities would celebrate the harvest together.” Proudly standing among the beans and corn of the 3 Sisters Garden Betty concurred, “I see the garden as a way to develop self-sufficiency, to learn that survival depends on everybody.”

Gustavo Esteva (1994) speaks of the fire at the heart of communal life, a primal organizing principle called *comida*. Difficult to translate, *comida* refers to a sense of

community where scarcity cannot appear. *Comida* as I understand it is much more than cooking food; it is a complex caring relationship with the fruits of the earth and each other. I have only just stumbled onto this marvelous concept, after the fact, so to speak yet I cannot help but believe that *comida* is what we experienced. Cooking our homegrown produce became an integral part of the garden experience emerging directly from my feminine instinct to nourish these children of poverty. Conducting scientific experiments in our garden would have grossly missed the point—remaining hostage to the intellectual culture of science while ignoring the larger issues of existence.

They Are So Removed From Experience

If there is any hope for reinvigorating our system of science education I believe it will be found not by increased teacher accountability, not with more rigorous scientific curricula, but rather through our sense of wonder. I am guilty I'll admit it. I arrived on the scene thinking that by connecting garden activities to the state mandated science curriculum I could somehow save the day. Instead what I found was that at the heart of scientific inquiry is good old-fashioned slack-jawed wonder. "Mrs. Thorp look at how big this turnip is!" "Laurie, the wheat is up!" For the children of Jonesville School the garden provided a complex, living environment ripe for experiential learning. The teachers often stressed the importance of the garden as a space for children to expand their life experiences, a place to interact with nature increasingly absent in their lives. In our push to quantify academic achievement we have got it all backwards. We pose questions to the world as we come to know the world not the other way around. We're asking these kids to question a world they know nothing about. Over and over I heard teachers tell me these children have very limited life experiences. When you're an inner city, latchkey kid, told to 'stay indoors when you get home from school' a 25'x 25' garden is a big wide world of wonder.

Can I Have One To Take Home?

I have to tell you I've saved the best for last. Hold on to your hearts they don't get any better than this. This is what makes research so darn rewarding. Just when you least expect it the data jumps out at you with a showstopper. And the best part, I can really toot this horn because I didn't figure it out, no, not me. I puzzled and puzzled, cogitated and scrutinized, and finally yelled 'Uncle.' So I took this hunk of data to Kristy and said, help. She looked at it briefly and nearly took my breath away with her powers of insight and interpretation. You see over and over the children's voices in the data spoke of wanting to take artifacts from the garden home. Didn't matter the size, shape or condition, it could be one sunflower seed or an old bloated cucumber from the compost bin—but, 'Please Laurie can I have it to take home?' These stories and experiences kept piling up but what did it mean? Why was it so important to take the fruits of the garden home? Scarcity? Pride? Approval? Was this true of all their schoolwork? Was there a need to take everything (artwork, science experiments, projects) home? "No," Kristy replied, "They are taking seeds and squash home because a teacher never touched it." She continued rapid fire, "There has been no interference, you see, tomatoes and cucumbers are safe to go home because they have not been interpreted through the hierarchy of the school. Seeds and gourds are not a school product; they are completely untouched by human hands, they don't bear our stamp of approval." Kristy continued, "Oh yeah, I noticed this. Remember the giant

sunflower head you brought in the room? It never exhausted itself. Those kids would pet, pocket and eat sunflower seeds without ever tiring of the experience. These children are awash in the artifacts of *schooling*. Textbooks, progress reports, vaccination records, permission slips all bare the mark of school approval. All are tainted with the scent of authority, slowly stripping away any notion of self-realization. As our evening drew to a close she looked me in the eyes and said, “By the way, that is also why the children love you. You’re the Garden Lady. They don’t associate you with school. Be careful, if you become too closely aligned with the school you’ll lose your magic.”

Conclusions

1. We know that culture is molded by the characteristics of the environment. Add a garden to the school environment and sure enough, the culture changes. A living garden is a potent force in re-shaping school culture. The Jonesville garden catalyzed cultural transformation, symbolizing and sustaining hope, growth, and community. “Underperforming school” no longer holds the cultural identity it once had.
2. As teachers and children continue to experience loss of time, loss of control and loss of place in their lives, the garden is a powerful leverage point to reverse these processes. For a very small investment of space and money the garden has provided a venue for healing these wounds of modernity. The larger rhythms present in our little 30’ x 30’ plot of earth cannot be segmented, fragmented, or disconnected; they patiently await our arrival.
3. The garden connects children to the organizing principle of experience. Our children are starved for experience. We are cutting children off from the very life forces that sustain us: earth, sun, rain, plants, and animals. They are sending us signals as they only know how, they wiggle, they squirm, they “act out” and tragically we medicate. In the garden children experience comfort, security, belonging, pleasure, and wonder associated with our experience of a living cosmos.
4. A plot of soil with a packet of seeds can become an important place of self-expression. We are all trying to create ourselves, to become uniquely alive; tending the earth ignites our creative life force. Gardening allowed teachers and students to feel more uniquely present in their work and in their lives.
5. Finally, gardening changes the status of food for all involved. When one gardens, food can no longer be viewed as a mere commodity for consumption; we are brought into the ritual of communal goodness that is found at the intersection of people and plants. Food that we grow with our own hands becomes a portal for personal transformation. Somewhere at the intersection of food, fire, earth, and humanity something sacred happens.

Recommendations for Research

1. Open yourself to emergent design. Emergent research, emergent planning, emergent process, emergent teaching, emergent learning, emergent anything. Go ahead; let it unfold. I promise you won’t be disappointed. By remaining open to the unknown we allow space for people to engage with their most pressing issues. It is liberating. Let go

the reins of control and listen; you can't imagine what you'll hear, and what you'll learn and most importantly, what you'll do.

2. While you are there, stay awhile. Stay a long while. You'll be tempted to leave, but don't. Stay with the process and remember it takes time. Hang with it, we are complex, tangled, contradictory beings, we. The pay is atrocious and the hours are long but stay with it. You will be rewarded, this I promise. You'll turn the corner and never look back. Prolonged engagement pays dividends in currency rarely traded these days: care, commitment, and human understanding. Good stuff this. Slow down, it is worth the wait.
3. While you're waiting, be sure to reflect. Reflect out loud so we all can hear. Really I mean it. Our closed system of discourse needs to reflexively come clean regarding our politics, ethics, ways of knowing and other entanglements that occur in *all* research situations. Reflexivity acknowledges my vulnerability as an author and I like that, for I am tired of the smooth, shiny certainty found in our academic journals. Who are we kidding? The older I get the less certain I am about anything; though I'm darn sure I don't want to go it alone. As I begin to value and express my uncertainty and ignorance about where my research is going and what my findings mean, I have gained a spaciousness in which new possibilities can expand and grow.
4. We hold the power of legitimized knowledge production in academia; make something happen. Don't become complacent with your privilege. Jonesville School has leveraged my academic affiliation to gain district recognition, garner funding, attract media attention and deflect further scrutiny. Go ahead, you pick; there are hundreds untold stories out there waiting to be heard; grab the spotlight, then step out of the way.

Recommendations for Practice

1. School garden programs should include a dedicated volunteer outside of the school hierarchy to work with teachers and children in the garden. Teachers do not have the time to adequately manage the demands of a garden without additional help.
2. Coordinate school garden programs with Extension Service Master Gardener volunteers, academic service learning, or other volunteer mechanisms able to sustain the garden activities and maintenance.
3. Cultivate involvement with parents and families in the garden activities. A community garden holds great promise to develop and improve school to home connections, so important for learning.
4. Do not limit the possibility of the garden by tying it to curricular constraints and parameters. Each school setting will determine the local knowledge that can emerge from cultivating the earth and human connections.

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School gardens are cultivated areas around or near to schools, tended at least partly by learners. Mainly they produce vegetables and fruits; activities may include small-scale animal husbandry and shery, beekeeping, ornamental plants and shading, and small-scale staple food production. School gardens are run for a variety of reasons.Â These have traditionally been used for science education, agricultural training or generating school income. Today, given the urgent need for increased food security, environmental protection, more secure livelihoods and better nutrition, perceptions of the potential of school gardens are changing.Â School-age children need a good diet in order to develop and grow well, to study, to be protected from disease, and to have the energy to get through the day. Elementary agriculture is taught in public schools and private schools, and deals with such subjects as how plants and animals grow and how soil is farmed and conserved. Vocational agriculture trains people for jobs in such areas as production, marketing, and conservation. College agriculture involves training of people to teach, conduct research, or provide information to advance the field of agriculture and food science in other ways. General education agriculture informs the public about food and agriculture. Scope of Agricultural Education.Â Program coordinator. Sales/service representative. Admission requirements for the study of Agricultural Education in Nigeria. The Oâ€™level subject combination and requirements needed to study Agricultural Education