Tongue-Tied No More: Diversity Pedagogy and Sense of Place in the Learning Gardens

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Abstract

This case study explores what it is like for culturally and linguistically diverse adolescents who are low-income English Language Learners to experience garden-based education at their school's Learning Gardens in southeast Portland, Oregon, even as they and their families—driven from their homelands as immigrants and refugees—try to establish roots and call Portland their new "home." This is a story of 16 sixth graders from seven countries for whom the Learning Gardens provide context and milieu for expression of their connection to place as they grow food and engage in significant ways in learning that encourage communication, crossing the English language "barrier." Students' experiences and conversations are captured as they develop a sense of belongingness, home, and place when connecting with soil, food, nature, peers, and adults in the Learning Gardens.

Résumé

L'étude de cas examine la réalité d'adolescents de cultures et de langues différentes en situation de faible revenu et d'apprentissage de l'anglais étant exposés à des cours axés sur le jardinage aux Learning Gardens *de leur école, dans le Sud-Est de Portland, en Oregon, d'autant plus qu'ils tentent d'ancrer leurs racines (ce sont des expatriés, des immigrants et des réfugiés) et de faire de Portland leur nouveau chez-soi. Voici l'histoire de seize élèves de sixième année provenant de sept pays, pour qui les* Learning Gardens *constituent un contexte et un milieu leur permettant d'exprimer leur rapport au lieu, pendant qu'ils cultivent des aliments et se livrent tangiblement à un apprentissage favorisant la communication, franchissant la soi-disant barrière de la langue anglaise. Les expériences et les conversations de ces élèves sont consignées à mesure qu'ils acquièrent un sentiment d'appartenance, de résidence et de lieu lorsqu'ils entrent en contact avec la terre, la nourriture, la nature, leurs collègues et les adultes des* Learning Gardens.

Keywords: Learning Gardens, sense of place, cultural and linguistic diversity, social justice, experiential learning, food-based and garden-based education, English Language Learners

School Gardens and Diversity Pedagogy

> "Who are these children that speak in tongues and live in fire? What happens to them as they move through the educational system?" (Castaneda, 1996, p. 201)

School garden programs are proliferating across most states and climate zones in the United States and also in other countries (Blair, 2009; Williams & Dixon, 2013). There is heightened interest in local food production, driven by fear over industrialized processed food, increasing obesity rates, type 2 diabetes, and outbreaks of salmonella and *E. Coli* among other pathogens (Eisenmann, Gundersen, Lohman, Garsky, & Stewart, 2011; Hedley et al., 2004; Vivian, Carrel, & Becker, 2011), along with the sedentary modern lifestyle of children (Louv, 2005; NCLI, 2009). A survey of the literature shows that gardens are promoted for a multitude of educational purposes that include: academic learning; community and parental involvement; environmental empathy and stewardship; food literacy and healthy eating habits; motivation and engagement; personal, social, and/or moral development; play and physical activity; and school bonding (Blair, 2009; Ozer, 2007; Williams & Dixon, 2013).

In fostering interdisciplinary learning (Ruiz-Gallardo, Verde, & Valdes, 2013), intergenerational learning (Mayer-Smith, Bartosh, & Peterat, 2009), and multisensory learning (Williams & Brown, 2012), school gardens are also active research sites to explore their pedagogical contribution. With increasingly diverse populations that voluntarily or involuntarily move and relocate to areas beyond their countries of birth, garden-based education provides opportunities for children and youth to grow food and be connected to place (Cutter-Mackenzie, 2009; Mayer-Smith et al., 2009). As Ableman (2005) states: "The process of growing food is settling. It provides clear and immediate sense of how one's actions affect the world" (p. 181). Gardens, for him, "provide great metaphors for life, the circle of birth and death made palpable because it is seen firsthand year after year. Working with the soil offers a sense of accomplishment and personal power" (p. 181).

If we consider eating to be a "cultural act" (Montanari, 2006), then gardens at school sites provide a practical entry point to address the growing cultural diversity encountered in schools. For this, garden programs can draw upon diversity pedagogy framed within concerns for social justice as students who try to learn content in the dominant language are often challenged and at a disadvantage performing on standardized tests (Gay, 2010; Neito, 2011; Sheets, 2005). Research concurs that educators must adapt if English Language Learners are to succeed in school. Effective diversity pedagogy views the natural connectedness of culture and cognition as key to linking the teaching-learning process to diversity (Sheets, 2005). Diversity pedagogy has interconnected dimensional elements that guide teachers, including: consciousness of difference, ethnic identity development, social interaction and interpersonal relationships, safe and inclusive classrooms, culturally responsive education, self-regulated learning, language usage, and self-evaluation. Visually capturing their experiences via photographs and use of cameras as learning tools supports English Language Learners in sharing their stories and experiences in profound ways (Raggl & Schratz, 2004). By building meaningful bridges between home and school experiences, the cultural heritage of different groups can be legitimized. In the Learning Gardens Laboratory, in Portland, this connection is explored.

Learning Gardens and Lane Middle School

The Learning Gardens Laboratory (henceforth, Learning Gardens) is situated at a 13-acre site opposite Lane Middle School (Grades 6, 7, 8) in Portland, Oregon. It was co-founded by the first author in 2004 through partnership among Portland State University, Portland Public Schools, and the city of Portland. Serving multicultural, low-income, outer southeast Portland neighbourhoods, the goals are to meet the diverse learning needs of Lane youth and address health and food issues in collaboration with university students through participatory exploration of food-based and garden-based teaching and learning. Over the past decade, interdisciplinary, multisensory, intergenerational, and multicultural garden curriculum and instruction are offered to Lane students during the academic year. Every week, six classes of 24-30 sixth grade students per class, come to the Learning Gardens with their classroom science teacher for a 90-minute block. Portland State University students manage the day-to-day maintenance of the property; they integrate the science curriculum and Oregon standards for use in the gardens as students rotate through various stations for a variety of topics, engaging with garden-learning in small groups.

The garden serves as an extension of the Lane classroom. Students learn about food through an integrated curriculum tied directly to the State standards. Besides acquiring basic gardening and cooking skills, students discover their ecological connections to the flora and fauna, study science with special focus on botany and nutrition, learn to compost, create art, and share cultural stories about food and gardening. Team building is fostered through collaborative garden projects. While they are not graded for specific garden lessons, they are graded for science by their teacher. An ongoing longitudinal study at the Learning Gardens has shown an increase in students' motivational engagement (Skinner, Chi, & LEAG, 2012).

Reflecting the growing diversity in the neighborhood, Lane is culturally and linguistically diverse: 15% Asian, 8% African American, 24% Hispanic, 3% Native American, 4% multiple ethnicities, and 45% White. In 2010, more than 19 different languages were spoken at home and about 18% of the 420 students were English Language Learners. In addition, 81% qualified for Free and Reduced Lunch and 24% for Special Education, indicating low socio-economic status and high special needs, respectively. The academic achievement gap has continued to persist between racial minority groups and Whites and also for the English Language Learners (Portland Public Schools, 2015). The second author focused on teaching the English Language Learners identified by the school as such, during each garden lesson. She was able to work with seven to nine students per class assigned to her. For new immigrants and refugees, in particular, gardens were venues where they could express themselves without feeling inadequate, shy, and "tongue-tied," as they often were in school.

Methodology and Data Sources

By taking a closer look at how English Language Learners experienced garden-based education at the Learning Gardens, we sought to better understand how the diverse learning needs of this student population could be addressed. As a garden educator and field researcher, the second author collaborated with other university garden educators to plan and implement curriculum and instruction attending to students' needs. She has a teaching license with an English as a Second Language endorsement. Social justice and diversity pedagogy were the guideposts driving the Learning Gardens program.

An interpretive/constructivist paradigm was used for this qualitative case study as the field researcher had an ongoing relationship as garden coordinator with the students and teachers at Lane, and hence was a full participant. "A full participant is simultaneously a fully functioning member of the 'community,' as well as researcher" (Mertler, 2012, p. 70). Because of this involvement, as LeCompte and Schensul (1999) explain, the data were informed by the field researcher's "personal experience in interaction with the study participants" (p. 59). Interpretivists also focus on the "stories told in the voices of many different people [and show] concern with what's going on within and between individuals" (LeCompte & Schensul, 1999, p. 49). For this study, students shared their personal experiences through photographs, interviews, reflections, informal conversations, and Harvest of the Month projects.

Subject Recruitment

The sample for this study consisted of 16 sixth grade students identified by the school as English Language Learners and assigned to the field researcher; eleven were girls and five were boys. Seven of the students were born in Vietnam, four were from Mexico, and the remaining students' families had immigrated from China, Estonia, Laos, Nicaragua, and Ukraine. They spoke Lao, Mandarin, Russian, Spanish, Thai, Ukrainian, and Vietnamese. Tuesday through Thursday, two different classes spent approximately 90 minutes at the Learning Gardens. Each visiting class was divided into three smaller groups distributed among the Portland State University garden educators.

Data Sources

Data sources included: photographs taken by the field researcher and students and their free-write responses, semi-structured interviews, student and field researcher reflections, and Harvest of the Month collaborative projects. Over a period of six months, each data source added a rich, intricate layer to our understanding of English Language Learners' garden experiences.

Photographs. Three cameras were given to English Language Learners during their garden visits to document what was most important to them.

Photographic images are quick, inexpensive, information-rich, digital, and evocative, according to Thorp (2006). Not only do photographs help recall details, but 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 to specific moments of human interaction" (Thorp, 2006, p. 128). The students took photographs to visually document their experiences, with no more than three students sharing a camera over several months to take photographs of what they found to be interesting in the gardens. Visually based research techniques provide data not available via language-centered procedures (Raggl & Schratz, 2004). With the photographs, students created a collaborative photo-journal for their classroom in which they "told their story." Students interpreted and explained the meaning and context of each photograph by responding to the following prompts, referred to by the acronym SAY:

S: What do you see?

A: What is actually happening? What activity is going on? What is the lesson about?

Y: Connect to you. Why is this moment important for you? How do you feel about it?

Semi-structured interviews. Toward the end of the term, semi-structured interviews were conducted with the English Language Learners in the garden individually for 10-15 minutes each, to record their final reflections. A poster collage of photographs representing a range of garden activities was presented to them and a photo elicitation technique was used to stimulate memories, thoughts, and feelings. Open-ended prompts encouraged discussion: If you were to tell your family about the Learning Gardens, what would you say? How do you feel about the Learning Gardens? What have you learned? What will you remember most? How is this garden experience different than the rest of your classes at Lane?

Harvest of the Month project. For their Harvest of the Month projects, students were asked: "If you could pick any vegetable to be Harvest of the Month, what would you pick?" They connected their Harvest of the Month project to their home and culture. This activity is captured in the data analysis section.

Informal conversations/Unstructured prompts/Observations. In order to build trust and relationship, informal conversations with students allowed for rich, personalized information to be captured by the field researcher during students' self-reflections. She also recorded her observations.

Data Analysis and Findings

Triangulation, an aspect of research credibility, was used during analysis. Data were coded with elements of diversity pedagogy serving as a framework. Responses were clustered under three broad areas (see Figure 1): (a) Social Relationships and Safe and Inclusive Setting/Place; (b) Culturally Responsive

Instruction (that included connections to food, culture, and language), as also seen in the Harvest of the Month Projects; and, since multiple senses were used in the gardens that triggered students' food memories of home, we also used the category of (c) Experiential and Multisensory Learning. These align with diversity pedagogy and, collectively, these experiences helped students with developing a sense of place. As students bonded with one another and with place, they called the Learning Gardens "safe" as it felt "like home." For each key area, the analysis section presents a sample of activities and observations to contextualize and ground the discussion of data.

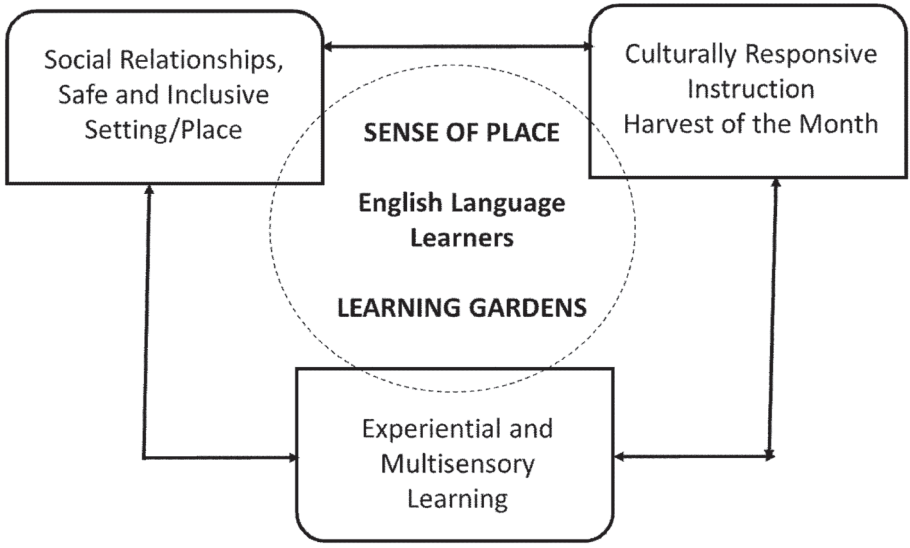

Figure 1. Sense of place in the Learning Gardens

Social Relationships, Safe and Inclusive Setting/Place

Activities

One day, when students entered the garden, they immediately set to work in the soil. Stepan[1] (from Estonia) hurried ahead to his plot, wearing gloves. The students started by forking, raking and weeding, working meticulously to prepare their garden beds. Leah and Val (from Vietnam), Carina (from Mexico), and Lidiya (from Ukraine) ventured off to dig up the daughters of strawberry plants and relocate them into their group bed. Carina and Val carefully transplanted the strawberries into the soil and watered them deeply. Students photographed the entire process, zooming in on the little plants for a close-up (see Figure 2). Next,

they planted carrots and radish seeds with Kim (from Vietnam) joining them. They agreed to add sorrel, since Lidiya shared, "we also grow this at home in Ukraine."

Figure 2. Student taking photograph

On another occasion, Stepan and Truc (from Vietnam) were focused on building a pea trellis and felt valued. Truc began to speak more, talking of family, hard work, struggles, worries, and joys. Interactions like these were common. Students often cooperated, problem-solved, and learned with partners or in small groups as they engaged in garden activities. For English Language Learners, the significance of working collaboratively in the garden went deeper. In response to the question, "What do the Learning Gardens mean to you?" the students offered these insights:

> We work as a team…10 or 20 years from now, I will remember the Learning Gardens. How we worked as a team in our groups in our gardens. (Artem)

> What I feel about the Learning Gardens is that I'm taking care of something with everyone else. You learn to work together. It is a time to bond with friends. (Gabriela)

Lucia (from Vietnam), Gabriela (from Mexico), and Mei (from China) shared grade-school memories working in their garden bed. Minh (from Vietnam)

anguished over her struggles in school, claiming to be "not smart" and "not knowing much English." Their home languages were different: Carina and Gabriela spoke Spanish. Mei spoke Mandarin, and she shared: "English is hard to learn." Gabriela often switched between Spanish and English and talked about planting with her father: "We planted tomatoes, cherry tomatoes." She demonstrated how to plant the tomato start, gently handling the roots, separating the fine threads and placing them into the hole she had created, stating: "Dad says to keep the dirt with the plant. It's full of nutrients." She felt empowered as she had a talent to share and here she was the expert. They worked together planting in the soil as they selected another large tomato plant and added peas, beans, and *pepinos* (cucumbers). Sheets (2005) explains that:

> …peer relationships and friendship connections allow students to develop social competence. Curricular content incorporating friendship as a basic component provides students with multiple experiences to enjoy and benefit from their friendship choices. If the classroom is racially diverse, these social opportunities can also prepare them to function competently with cross-race peers. (p. 72)

The data confirm the importance of peer and social relationships. Place memories were strengthened through activities with peers (see Figure 3). Truc summed it up best, saying: "I will remember the people that I worked with, how we got along." In their photo-voice, Mei shared: "I feel peace. I see friendship. I see that we can help harvest and love," and similarly Lidiya stated: "I am making new friends."

Figure 3. Preparing garden beds

Allowing students' cultural, emotional, and social expressions helped them feel valued and included. Several English Language Learners confirmed this in their interviews. Minh, a recent Vietnamese immigrant, shared her impressions of the Learning Gardens: "It's like I'm a member. I'm home. I'm safe. I'm comfortable. They help me do what I need to do." Gabriela expressed a similar sentiment: "I feel like I am at home." In *Diversity Pedagogy: Examining the Role of Culture in the Teaching-Learning Process*, Sheets (2005) elucidates the elements of a culturally safe context: "a classroom environment where students feel emotionally secure; psychologically consistent; and culturally, linguistically, academically, socially, and physically comfortable, both as individuals and as members of the groups to which they belong" (p. 84). This was reflected in Mei's comments: "No one is judging me for who I am. It is a circle of life, of friendship," and in Gabriela's increasing confidence: "I feel safe and healthy…and I love to see all the green fresh vegetables and fruits." Other compelling testimonials to the safe climate of the garden were found in the students' reflections:

> I feel Learning Garden has helped me feel more comfortable with expressing myself and being able to be who I want to be. I feel good and safe. It's a fun place. (Carina)

> To me it is a special place…where you can go when you are sad because it helps get you happy. You can also find some peace and you can relax yourself. Let pressure go away. (Val)

The English Language Learners felt they each had unique backgrounds and life experiences that were special. "[L]earning is about building knowledge together with others and as one interacts with textually rich contexts," writes Rahm (2010, p. 33). To the students, the gardens provided text and safe context for learning. Similar to Rahm's calling, the English Language Learners in this study were "genuinely interested to make sense of their situations and to create their own understandings when engaged in meaningful science activities" (Rahm, 2010, p. 33). The Learning Gardens served as a safe, nurturing environment for students to build friendships and relationships as they connected with growing food and interacted with one another.

Experiential and Multisensory Learning in Place

> You feel it, hear it, touch it. Instead of looking at a book, you actually work and try to plant a plant. (Keola)

Activities

Through holistic, student-centered activities, the Learning Gardens provided unlimited opportunities for English Language Learners to interact with plants and place. Using not only intellect but also their hands, heart, and senses, the Lane students explored, inquired, wondered, observed, discovered, and tried tasting

Figure 4. Student focused on planting

students explored, inquired, wondered, observed, discovered, and tried tasting new things as this scenario conveys: students were given a 25-square foot piece of land to cultivate beds and grow food. Putting their collaborative skills to practice, they designed, dug, planted, and cared for their garden together. They removed rocks and bark chips, raked, forked, broke up mud clods, turned in cover crops, and pulled weeds. The English Language Learners worked steadily and enthusiastically (see Figure 4). As soon as their tools hit the soil, they began to talk, to connect, to discover. They felt comfortable enough to communicate their thoughts, feelings, and struggles about school, friends, home, and life. Connecting to the Learning Gardens, they were fascinated by the abundance of worms and centipedes they found in the soil. One day they sampled Asian pears from the orchard. Keola told of a similar variety found in his native country of Laos. Truc shared her favourite way to enjoy the fruit, with salt, pepper, and a little bit of sugar. Minh nodded, "I eat it like that too." For her, English language was very new.

Learning Gardens "are naturally rich sites for sensory engagement, as they are filled with fragrant blossoms, thorny and prickly vines, delicious fruit, rustling leaves, and colorful flowers" (Williams & Brown, 2012, p. 146). The data confirmed the importance of hands-on, multisensory experiences. English Language Learners found pleasure in being active outdoors: digging, planting, harvesting, weeding, mulching, tasting, touching, smelling, eating, and cooking.

The interviews captured sentiments about their experiences. Minh shared: "I get to work in the soil and plant. It's hands-on instead of talking about it. I get to dig and get messy. That's my favourite thing." And Omar, who was from Nicaragua, stated: "I like trying new vegetables, fruits and stuff. Fruits that I never heard of." The students' last day reflections further exemplified the value of hands-on experiential learning and ways they saw learning in the garden different than their classroom learning:

> …we get to be outside and it's refreshing and we get to have fun while learning instead of just sitting on chairs in a classroom reading, writing, or having to do school work. (Stepan)

> In class, in school, we just work with papers in science. At Learning Gardens, we get to do more things. We walk around and talk about how to plant stuff, water. It's a lot funner. You get to feel the breeze. (Filipe)

> Here we plant and do more stuff outside. In school we just sit in a chair and just learn. Here we get a lot of exercise, fresh air. My brain's working harder. I'm moving around. In class I fall asleep. (Mei)

Victor (from Mexico) claimed a corner of the vegetable bed for himself; he was excited about planting potatoes, sunflowers, and nasturtiums. He protected the space by roping it off with a twine. Keola planted onions. In a touching moment, we witnessed his gentleness in handling the delicate starts, placing them one by one in the soil. Filipe and Omar opted to work together to build a trellis, awkward at first, unsure of what to do, afraid they might make a mistake. After some encouragement, they began to take more risks and finished the trellis. With increasing confidence, Omar wanted to plant radishes. Initially quiet and shy, he had grown to speak and participate with his peers. Often a flower, fruit, or vegetable encountered in the garden would elicit a memory, initiate a connection to family and food, bringing students of different cultures together as they shared stories, an important aspect of learning (Dyson & Genishi, 1994). Shucking an ear of corn reminded Filipe of his grandpa's farm in Mexico, hot weather, and raising chickens, and Carina of her mom grinding the kernels on a metate and making mole. The smell of cilantro triggered a discussion among many students comparing family recipes from Vietnam and Mexico. All students made personal sensory connections to food, family, culture, and language. Sobel (2005) stresses the advantages of experiential teaching: "By emphasizing hands-on, real-world learning experiences, …[it] helps students develop stronger ties to their community, enhances students' appreciation for the natural world, and creates a heightened commitment to serving as active, contributing citizens" (p. 7). Similarly, Orr (2005) explains, "in the reciprocity between thinking and doing, knowledge loses much of its abstractness, becoming in the application to specific places and problems, tangible and direct" (p. 91). The English Language Learners revealed in their interviews their understanding of

the importance of what and how they were learning at the Learning Gardens in tangible terms, learning about animals and plants, how to harvest, and to build a relationship with place through their own experiential and bodily engagement.

Culturally Responsive Instruction and Harvest of the Month Project

English Language Learners need to be able to understand the content presented as well as the language. Reed and Railsback (2003) summarize:

> Teachers can make content more understandable to their students by providing nonverbal cues such as pictures, objects, demonstrations, gestures, and intonation cues. Other strategies include building from language that is already understood, using graphic organizers, hands-on learning opportunities, and cooperative tutoring techniques. (p. 10)

Further, they state that to increase "students' opportunities to use their language skills in direct communication and for the purpose of 'negotiating meaning' in real-life situations" (p. 10), cooperative learning, project-based learning, and one-to-one teacher/student interactions are proven successes.

Activities

Harvest of the Month project was seen as a way to address the cultural wisdom brought to class by the English Language Learners. They researched botany, medicinal uses, culinary uses, recipes, geography, and history and included photos, maps, cultural stories, personal narratives, poetry, art/sketches, and multisensory reflections, and interviewed family members. This enabled students to share important cultural information and instill cultural pride while displaying their posters in the cafeteria. They studied structures and functions of plants and then used the actual parts of plants to initiate the discussion, brainstorm vocabulary words, and access prior knowledge. After they touched, examined, dissected, tasted, and smelled the various examples of plants, the students sketched their observations and filled in the chart in Figure 5.

Students made connections to their homes and previous learning and built vocabulary using multisensory explorations. To facilitate their selection, they were told to close their eyes and think of their favourite meal: "What fruit, vegetable, or herb do you see? What comes to your mind first? Think about a plant you are familiar with or want to know more about. What do you want to see in your school cafeteria or growing in the Learning Gardens?" Although the decision took time, each student mostly chose a different plant, maximizing diversity and opportunities to learn from each other. They selected cucumber, strawberry, apple, peach, pepper, radish, bamboo, jicama, carrot, cherry, pear, blueberry, watermelon, and potato. They excitedly talked about their plants. Leah wanted to study blueberry, mentioning that her mom grew blueberries at

For their Harvest of the Month, Soil to Supper final project, students chose a vegetable, fruit, or herb that they wanted to see as the harvest of the month, grown at the Learning Gardens and served in the school cafeteria. Each student created a display poster with the following elements:

- Botany: plant information
  - sketches and photos
  - show and label all parts of the plant
  - classification: its plant family
  - varieties in the family
- Growing and harvesting:
  - how to take care of it
  - when to plant and harvest
  - habitat
- Cultural information:
  - history/origins
  - stories
- Reasons to eat:
  - nutrition
  - medicinal
  - other uses
- How to eat:
  - prepare
  - recipe
  - family/cultural tie-ins
- Share a story:
  - memory
  - why did you pick this plant?

Figure 5. Harvest of the Month chart

home. Carina shared a memory of jicama. "Oh, it's so good with lemon!" Truc agreed: "My mom puts it in soups and salads... and we drink it. We serve it in so many ways in our culture," and they compared their mothers' recipes.

The Harvest of the Month unit on corn generated personal and cultural stories. Despite limited verbal English, Victor shared a story about himself and his grandfather. "My grandpa grows corn in Mexico. Every summer he puts me to work in the fields. It is hot! He says it is good for me...good for me…to work with the corn. We eat the corn too." Carina also expressed how her mom ground the corn on a grinding stone. Staff had brought metate. Gabriela approached the metate and showed how her mom used it. "She mixes the maza with water to make tortillas. We use the corn in mole also." This created further interest in corn. A picture of *elote*, a Mexican treat of corn on the cob, covered with mayonnaise and sprinkled with chili, elicited many "yums" and "Oh, I love that!"

Harvest of the Month empowered students to take responsibility for their learning as they quickly became fascinated with and attached to their research. Several students mentioned the Harvest of the Month poster project as one of their favourite activities of the year. Lidiya professed, "I like the projects and I really like making the posters of the Harvest of the Month. I like drawing the pictures." When putting the final touches on her poster, she added real strawberry leaves, decorative lettering, and photos that she had taken at the Learning Gardens (see Figure 6). Carina stated, "I like looking for information for the Harvest of the Month." Although she struggled at times with reading and writing, Carina was very proud of her poster on jicama.

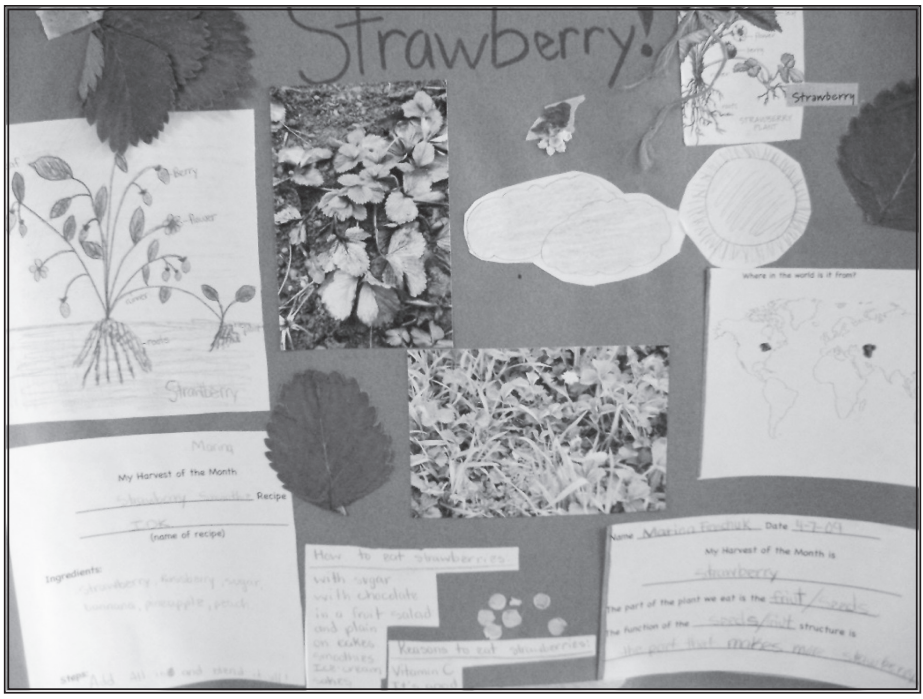

Figure 6. Strawberry Poster

As students researched the origins of their plants, they drew maps, coloured, and practiced skills such as reading, note-taking, summarizing key concepts, writing, and sketching. A discussion in Spanish and English on tomatillos, tomatoes, and peppers also ensued. Photos also adorned the posters. With this Harvest of the Month project integrating art, writing, and reading with science, students were able to choose a topic they were most interested in and demonstrated their individual strengths and knowledge in a way that best suited them. Flexibility, choice, and options were of importance to get students to maximize their communication. Their Harvest of the Month posters were confidently displayed in the cafeteria and overran the hall walls, sharing interesting information for all students at Lane to learn.

Conclusion and Recommendations: Diversity Pedagogy and Sense of Place in the Learning Gardens

The Learning Gardens provided countless opportunities for English Language Learners to make connections and develop a sense of place, which was important as they came from families that were uprooted as immigrants and refugees.

They were engaged in growing food and learning in a safe and inclusive group setting, with culturally responsive education. Student reflections revealed their understanding of how the Learning Gardens was benefiting them personally. In response to the prompt "To me, the Learning Gardens means…," they stated:

> Time to be in your own little world. Letting your imagination go wild. Planting dreams in the ground and seeing them grow. If I can do this, take care of a plant, then I can see I can take care of myself and help myself and helping other things. (Minh)

> I'm proud of myself, that I get to learn something new and when I get home I get to plant stuff and make a garden. (Lidiya)

Orr (2005) captures the significance of place as promoting "diversity of thought and a wider understanding of interrelatedness. Places are laboratories of diversity and complexity, mixing social functions and natural processes" (p. 91). Indeed, English Language Learners were empowered with their connections and tangible engagement with place at the Learning Gardens. As evident in their photographs, reflections, and interviews, many students were clearly attached to the Learning Gardens. Gruenewald (2003) points out that place-based learning offers "a vibrant counterpoint to the dominant system of education, which fails to connect meaningfully to the lives of learners and the communities from which they come" (p. 621). We discovered from the data that many English Language Learners were aware of the limitations of the classroom. As an alternative to the classroom, the Learning Gardens as places "are deeply pedagogical centers of experience and meaning-making [and] teach us who, what, and where we are, as well as how we might live our lives" (Gruenewald, 2003, p. 636). Students recognized the merits of their visits, as they referred to the Learning Gardens as a place to "garden and harvest," "care for the environment," and "grow my plants and food." At the gardens, they learned how to nurture different plants and prepare vegetables and they learned about "what's important." From their detailed photographs of dew-covered lupines, pollen-collecting bees, and pink pear blossoms, the significance of the natural environment was clear.

Place-based education is experiential, providing context that is specific to the dynamics of the place; it is multidisciplinary, and connects place with self and community (Smith & Sobel, 2010). "The study of place involves complimentary discussions of intellect: direct observation, investigation, experimentation, and skill in the application of knowledge" (Orr, 2005, p. 90). For Smith (2002), "one of the primary strengths of place-based education is that it can adapt to the unique characteristics of particular places, and in this way it can help overcome the disjuncture between school and children's lives that is found in too many classrooms" (p. 584). Considering these attributes, the Learning Gardens provided an important context for English Language Learners to connect to the land, the plants, the vegetables, their group, their teacher, their families, their culture, and themselves. Outside of their classroom, students experienced an

integrated, hands-on curriculum that allowed them opportunities to relate with each other and with the environment.

At the Learning Gardens, several of the students felt comfortable being themselves, speaking in their native languages and using English, investigating questions, and demonstrating skills in front of their classmates. They were no longer shy and quiet for words. Garden-based approaches to learning can be a source of relief for English Language Learners from the stress they face from high-stakes testing and the difficulties of communication in the traditional classroom. Desmond, Grieshop, and Subramaniam (2002) note that "garden-based learning has the potential to enrich basic education in all cultural settings" (p. 9). Although this study is limited to one program with a small sample size of 16 sixth graders, it nevertheless is consistent with research showing similar empowerment for culturally diverse students in garden-based programs. For instance, in her report of an elementary multicultural school garden in Australia, Cutter-Mackenzie (2009) concluded that children's gardening can "transcend language and cultural differences" as the "program led to the development of a 'space' that facilitated a strong sense of belonging among students who were formerly dislodged from their birthplaces" (p. 133). This study is unique in that it draws upon the key tenets of diversity pedagogy explicitly to advance the learning of science in school gardens for the increasingly diverse student population that is often marginalized, and it does so especially with middle school-aged students where there is a dearth of research (Williams & Dixon, 2013). Learning gardens can provide alternative models to traditional classroom instruction and also allow for students' individual expression and exploration through their stories. As Chavez-Chavez (1999) states:

> Multicultural education and its discourse are inextricably linked to the telling and listening of story. ….We construct our stories through conversations, through our lives together, through the visions that we construct together. This process cannot exist without both teller and listener, a tango, where no one leads nor follows but because of both something new, better is created. (p. 248)

As seen in this study, a synergistic relationship exists between garden-based education and diversity pedagogy. In being present to the unique life experiences of the English Language Learners uprooted from their cultures and trying to establish roots in a new place, gardens provide a potent alternative to the traditional forms of classroom learning by embracing diversity. Using an approach to culturally responsive pedagogy that draws upon prior knowledge, experiences, and frames of reference of culturally diverse students enables relevance in learning encounters for them (Gay, 2010; Neito, 2011; Sheets, 2005). As Payne (1998) notes, "there are significant social and cultural meanings attached to gardening and agriculture, which have an impact on people's responses to working the soil" (p. 40). She discusses the challenges and successes of working with adolescents from various cultures in the garden and suggests that we can value cultural differences by connecting history, earth knowledge, art and creativity,

"respecting each person's story," and "taking an active role in helping people think about how issues of race and culture impact students' experiences in the garden" (Payne, 1998, p. 41). For culturally and linguistically diverse students, the garden has potential to empower and to encourage pride and respect in their cultural heritage (Payne, 1998). At the Learning Gardens, students in this study learned to value cultural differences by connecting with one another and sharing their personal life experiences especially with food; affirmation of difference can be an empowering and worthy overall pedagogy.

In her diversity pedagogy theory, Sheets (2005) argues that there is a direct relationship between teacher pedagogical behaviours and student cultural displays. The interconnected dimensional elements that guide teacher and student behaviour include diversity and consciousness of difference. Gay (2010) urges teachers to adopt culturally responsive teaching using cultural knowledge, prior experiences, frames of reference, and performance styles of ethnically diverse students to make learning encounters more relevant and effective for them. For garden-based learning, the following approaches can be used to include English Language Learners: providing a safe and positive climate, using real objects and visual resources, offering hands-on activities, promoting cooperative and collaborative learning, designing meaningful and purposeful content and culturally inclusive curriculum, activating prior knowledge, planning problem-solving and inquiry-based instruction, and encouraging and allowing students to use their native language (Curtin, 2006; Herrell, 2000; Neito, 2011; Westervelt, 2007). "Using a variety of strategies when communicating with English Language Learners is one of the best ways that environmental educators can help make content area lessons more comprehensible" (Frederickson, 1999, p. 13). Creating a culturally safe classroom that is fair, consistent, and comfortable (Sheets, 2005) and promoting an atmosphere of trust, acceptance, and mutual respect (Curtin, 2006; Richards, Browne, & Forde, 2006) are additional dimensions of diversity pedagogy that encourage equity and success for all students. Many students in this study acknowledged that they felt safe, relaxed, secure, peaceful, and accepted at the Learning Gardens. The classroom tensions and pressures decreased; small groups allowed teams to form stronger interpersonal relationships that allowed them to feel comfortable to ask questions, clarify directions, and share their thoughts. Students often tried new things such as tasting chard and lemon cucumbers, turning compost with a pitchfork, planting tiny carrot seeds, and measuring garden beds. Clear, consistent, and high expectations set the stage for student accountability, positive behaviour, motivation, and engagement. A positive, secure learning environment fosters responsibility, compassion, tolerance, and risk-taking.

Many of the attributes of garden-based education that help with the development of sense of place coincide with appropriate teaching techniques for addressing diversity and helping English Language Learners discover the wonders of place. To effectively reach English Language Learners, garden-based programs can integrate experiential, multisensory lessons and build on diversity pedagogy;

facilitate collaborative projects; support a trusting, respectful, culturally inclusive atmosphere; and allow for the development and strengthening of interpersonal relationships. Through sharing of stories, students come to understand the significance of their learning at the Learning Gardens. Communicating in a safe environment, the English Language Learners will be tongue-tied no more.

Notes

[1] Pseudonyms have been used for students.

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