

Motivating Teachers to Use Outdoor Learning Areas

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By  
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**Motivating Teachers to Use Outdoor Learning Areas**

Title of Item

Outdoor learning areas; Resistance to change; Principal's support of innovative change

3 to 5 keywords or phrases to describe the item

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## Abstract

Based on teachers' responses to an informal school-wide survey, this case study describes teachers' resistance to incorporating into core academic instruction the Native Schoolyard Habitats on the Land View School campus. Results indicated that resistance to innovative change was due to a combination of teachers' attitudes and personal motivation, in conjunction with leadership style of the principal. Effective ways to promote teacher involvement were investigated and found to encompass increasing teachers' awareness of the benefits of utilizing outdoor learning areas, and encouraging participation in the effective design of the outdoor learning areas on the school campus. The findings will be utilized by the teachers to develop a school resource guide for use in the outdoor learning areas on the campus.

## Motivating Teachers to Use Outdoor Learning Areas

### Chapter 1

#### Introduction

The intent of this study is to understand why teachers' underuse the three Schoolyard Habitats at Land View School, and to inform the development of a standards-based curriculum resource guide to support instruction in the habitats.

#### *Background Information*

In spring 2010, a team of teachers from Land View School, located in a semi-urban, agricultural area of Southern California, attended an informational training session to learn how to apply for a Fish and Wildlife Services (FWS) grant to install native schoolyard habitats on their campus. The initial team was comprised of two second grade teachers, and one teacher from each of the third, fourth grade and fifth grade levels. Following a day-long training, this team drafted a preliminary plan of where a native habitat could be installed and how it might be used. With support from an FWS representative, they presented the plan to the school's principal and the school district's facilities director. The discussion included specifics of where the habitats could be installed, how much time, personnel, and financial support the district could provide, and who might be involved with the team. As a result, a year and a half long application process for a Fish and Wildlife Services (FWS) grant began.

During the process of applying for funding there was change in the planning team personnel. The fourth grade team member transferred schools and the third grade teacher changed grade levels. Nonetheless, the team grew in size: a different third grade and additional

second grade teacher joined, along with the school principal, gardener, and Boys and Girls Club Director.

The grant process required students to be involved in all aspects of research and planning, and the whole school had some level of engagement in the quest for funding. In early spring 2011, a preliminary habitat was funded by the Land View Student Council and installed with FWS support. During summer 2011, the grant was approved, and the entire school participated in the planting of the habitats in December, 2011, and February, 2012.



School wide planting day, January 2012

Once the habitats were installed, a rotation system was devised whereby different grade levels or individual classes signed up to take care of watering, weeding and picking up trash from the different habitats. The habitats flourished, but soon interest and participation began to wane, and classes only visited the garden if there was a request for “emergency maintenance”.

Meanwhile, the Habitat Team (HT) had received curriculum to complement the habitats, and shared some of the ideas, but focus on core academics took precedence over formal visits to the habitats. Parent volunteers were sought to participate in occasional weekend “Gardening Parties” to clean up and maintain the habitats, yet only a few classrooms occasionally utilized or attempted to maintain the habitats.





Coastal scrub, Channel Islands inspired Native Habitat January 2013



Riparian Native Habitat, January 2013

The goal of this study is to inquire into teachers' perspectives toward the habitats and their knowledge of how the habitats can be used, as well as their preparedness towards conducting academic lessons in the outdoors, with the outcome that the habitats will be better utilized in the future. To aid in more effective use of the habitats, the findings of this study will inform the development of a curriculum guide with activities and lessons built around the habitats that will support integrated instruction in core academic content standards and California English Language Development Standards.

In focusing my research, the question I kept coming back to was, "Why don't teachers take their students to the habitats?" I was perplexed because every classroom had been involved at one point or another in the research, design and installation of the habitats. Furthermore, any time the team made a request for assistance in maintaining the areas, classes representing all grade levels stepped up to the plate. Why, then, were teachers NOT taking their students out for instruction in the habitats?

Utilization of the habitats decreased among the HT members as well. The team began an inquiry into the reasons why teachers were resistant to incorporating instruction in the outdoor laboratory into their academic curriculum. These reasons were revealed when committee members surveyed their colleagues during grade level meetings.

**Reason number 1:** Not enough time.

Teaching days were rigidly mandated by district and school-wide policies (Collinson & Cook, 2000). Teachers had limited resources and this determined their hourly schedules. Land View was a Title I, Program Improvement school with a population of approximately 80% English Language Learners. Core academics were the focal points of all of instruction. Physical Education (PE), Music, Art, Science and Social Studies took a back seat to

Language Arts (LA), Math, and English Language Development (ELD). The school practiced “fidelity to the program” of the LA and Math series, and there was no time for additional content areas.

**Reason number 2:** Managing outdoor learning.

With an increase in both class sizes and instances of behavior problems, management in a confined classroom setting had becoming more challenging. The school did not have a standardized discipline policy or a consistent, school-wide program for behavioral expectations. Taking children outside where there may be fewer physical boundaries can be a concern and liability (Danks, 2010). It can be harder to project your voice, keep students’ attention focused on instruction, and keep the class together as a group (Sisson, 1982; Basil, Gillespie-Malone & Collins, 1997). Time lost in addressing these challenges coupled with the perceived energy needed to conduct a lesson outdoors made indoor instruction appear a more effective option.

**Reason number 3:** “What can I do in the habitats?”

Many of the classroom teachers reported they were uncomfortable straying from scripted textbook programs, and few of those programs (if any) directed teachers to take students to natural areas for lessons. Many of the teachers stated that they had insufficient knowledge of what existed in the habitats, and they felt uncomfortable even weeding without guidance. The consequence was that teachers adopted the attitude that it was safer and easier to stay indoors and use what was tried and true, and required.

Assuming these reasons represented the greatest obstacles to a shift in practice of taking the students outside, the team began to address these issues. One of the most challenging was

the time issue because instruction was limited to a finite number of minutes in a day, the use of which was specified in various policy documents. The team needed support from the Principal in order to address the time issues.

The “what do I do?” question appeared easier to tackle as curriculum had been provided to complement the habitat installations, and team members had many activities and lessons related to the habitats which could be shared. Therefore, the team began with this question as the starting point to rekindle interest in the outdoor classroom setting.

The remaining issue of managing outdoor learning gave the impression of being easy to resolve. The original plans had called for “symbolic boundaries” with natural seating within the habitats to provide some structure for outdoor learning, a management strategy recommended by Danks (2010) and Kennedy (2011). The team simply needed to implement the plans.

For almost two years the Habitat Team (HT) continued to meet and discuss sharing curriculum and adding to the habitats. However, in those two years, nothing changed. Each team member believed in the importance of the habitats, and wanted to insure that they did not die or disappear, but the team remained unsuccessful at producing the physical changes that had been planned. The HT members continued to be the only teachers actively visiting the habitats, and even the frequency of their visits had begun to wane. Like their colleagues, the team shared the same issues of time and behavior management. Ironically, attempts to involve other teachers failed due to time conflicts and other school priorities, an issue related to the findings of Collinson and Cook (2000).

There was a new principal who had not been involved in the development of the habitats, and he was more focused on the issue of the school’s low test scores. As a result, he rarely attended the team meetings and had very little understanding of the project. While he did not

directly oppose the plans, because of his concerns with students' academic deficiencies (as indicated by standardized test scores), it was difficult to get him to devote sufficient time during planned staff meetings and collaboration time to work with the staff on habitat related issues. When time was provided, typically it was a short amount at the end of school-wide meetings, with people leaving before the discussion began. While the team tried to arrange other 'voluntary' times for meetings, there were so many regularly scheduled meetings on every day of the week there was usually a conflict with grade level or other committee meetings.

Because this was a project in which I was deeply invested, I willingly took on the responsibility for "fixing" problems. The ultimate "fix" was going to be through my Master's Project. I planned to create a Habitat Guide-Book, complete with information about the plants in the three native habitats. With a goal of removing any excuses for not utilizing the rich resources on our very own campus, I envisioned writing discipline integrated, cross grade level curriculum. While this would have been a valuable, worthwhile endeavor which some teachers might have used, it would really have perpetuated the original problem: most teachers were not actively involved in the maintenance and continued development of the habitats, nor had they developed any motivation to become more involved. Lack of curriculum and understanding of the habitats may have a deterrent to involvement, however, according to Hultman (1995) there was probably an over-arching issue that needed to be uncovered and addressed. Thus, my research led me to explore several possible facets of the problem: the value of outdoor educational experiences, Common Core and Next Generation Science Standards, best practices in integrating authentic, outdoor experiences with classroom instruction, school leadership and management, and organizational change.

When I presented my “aha” moment to the team, they were quite supportive. I suggested that we might get more buy-in from colleagues if they were included in the development of the curriculum and the resource guide. I suggested that, as a team, we continue working on other areas, such as ways to include the Principal and district level personnel in planning and problem solving the physical designs. However, I wanted to withdraw my offer of creating the Habitat Guide. As I reevaluated my role on the committee, I was forced to change my inclination to rescue the habitat project and this factor had a positive effect on the renovation of the outdoor learning areas.

## Chapter 2

### Discussion of the Literature

This project involves many critical factors: teacher motivation to bring about change, the role of leadership in connection to teacher motivation, the role of outdoor education in standards based instruction, best practices for developing and implementing standards-based lessons which utilize outdoor learning environments, and further physical development of outdoor sites to support student learning. These factors lead me to research organizational change, school leadership and management, value of outdoor educational experiences, Common Core and Next Generation Science Standards, and best practices in integrating authentic, outdoor experiences with classroom instruction.

Research into organizational change in schools often revolved around the principal and leadership styles, or how principals could motivate teachers to accept or participate in organizational changes (Hultman, 1995; Fullan, 2004; Zimmerman, 2006; Eyal & Roth, 2010). Current research on the benefits of engaging students in learning activities outdoors is abundant (Louv, 2012; Sobel, 2008; NGSS Framework, 2014), as are learning programs, curriculum, and activities that can be adapted to different school sites and campuses. There is a growing movement to “green up” campuses by adding gardens and other plant-related features to school campuses, as well as increasing efforts to minimize waste and energy use (Danks, 2010). The newly adopted national standards in math and language arts, Common Core State Standards (CCSS), and the new science standards, Next Generation Science (NGSS), support the use of outdoor learning areas through authentic, student-centered activities.

*Organizational Change, Leadership, and Teacher Motivation*

In searching the literature on organizational change, I pursued two avenues of inquiry: teacher motivation and resistance, and the principal's leadership style. Teacher motivation can be influenced by a number of variables such as a principal's leadership style (Fullan, 2004), the significance of a change to the teacher (Shellenbach-Zell & Gräsel, 2010), and the teacher's self-perception (Zimmerman, 2006; Vetter, 2012). Research also supports a positive correlation between lack of motivation and teacher burnout (Eyal & Roth, 2010), as well as burnout and teachers' perception of time (Collinson & Cook, 2000). Resistance to change can be mitigated by recognizing symptoms and addressing underlying causes (Hultman, 1995; Zimmerman, 2006).

The principal's leadership style can influence teacher motivation. In their study of the relationship between teacher motivation, teacher burnout and the principal's leadership style, Eyal and Roth (2010) found positive correlations between lack of motivation and burnout, and leadership style and motivation. Principals who are transactional leaders make decisions, create expectations, provide extrinsic motivation, and monitor teacher performance and practice. This type of leadership relies on teacher compliance with negative consequences for non-compliance. Eyal and Roth observed a high correlation between teacher burnout and transactional leadership. Transformational Leadership allows for teacher self-determination. Principals who are transformational leaders include teachers in decision-making, promote a shared vision, and support individual teacher's interests and autonomy. This leadership style promotes intrinsic motivation because teachers perceive activities or innovations as valuable and interesting. This can lead to teachers exceeding expectations in terms of time and effort in their practice. The



authors noted a positive correlation between transformational leaders and teacher motivation, concluding that teachers with high motivation experience lower levels of burnout.

In a discussion of the importance of allowing teachers more autonomy and inclusion in the decision making process, Fullan (2004, p. 161) observes how top-down strategies are often less effective than shared problem solving: “The people involved are the key element. The top can provide a vision, policy incentives, mechanisms for interaction, coordination, and monitoring, but to realize the vision there must be people below building capacity and shared commitment so that the moral imperative becomes a collective endeavor.” While relinquishing control may be difficult, Fullan adds that, “...the scariest part is letting go” (p.164). This may be the key to gaining teacher support for innovation. Fullan notes that by letting go leaders may actually realize more control than before: they will have better communication with their employees, receive more feedback, and know more about what is really occurring in the organization.

Fullan (2004) examined how teacher motivation affected involvement in innovative change. In studying self-determined motivation, Shellenbach-Zell and Gräsel (2010) observed that the level of significance attributed to an innovation by the individual determines whether they voluntarily become involved in the innovation. In general, when teachers found high value in the program change and/or reform, and were given autonomy or found social needs being met, they were more likely to be motivated to promote the innovation.

Other research on teacher motivation concentrates on how teacher motivation and self-efficacy can be predictors of either teacher burnout or positive experiences and engaging instructional practices. Schiefele, Streblov, and Retelsdorf (2013) note the difference between interest in subject matter and interest in educational practices. They found connections between

low burnout and teachers' level of motivation and their degree of interest in teaching methods. They also note that autonomy had a positive effect in increasing teacher motivation, a finding supported by Fullan (2004). Teachers who are given the autonomy to position themselves as leaders in innovations are more likely to visualize themselves as agents of change (Zimmerman, 2006; Vetter, 2012). Teachers who were overwhelmed and had little control over their professional environment experienced high burnout and low motivation (Schiefele, Streblow, & Retelsdorf, 2013).

Motivational factors are not the only obstacles to teachers' participation in organizational change. Lack of time is a barrier (Collinson & Cook, 2000). In their study, the authors do not address instructional time but rather professional development time. The authors assert that past research looks at time as linear, so the simple solution is to restructure or "find" time for teachers to collaborate. This is accomplished by teaching longer on some days in order to save, or bank, time for an early day of collaboration. Another solution is to provide a planning period during the day. However, according to the authors, the problem is that the perception of time is multifaceted. Teachers need time to reflect and learn independently, time to share what they've learned, time to prepare, time to decompress, and time to listen to and tell stories. What teachers do during restructured, "found", professional development time is often directed by the principal. The authors concluded that what teachers need most is self-determined professional development time. While organizational changes require time for teachers to participate in organized collaboration and professional development, administrators need to be mindful of the needs of teachers and their time issues.

Resistance to change can be overcome by understanding and addressing the underlying reasons behind it. Hultman (1995) identifies the symptoms and causes of resistance to change,

and offers strategies to overcome that resistance. One symptom, active resistance, can be expressed through complaining about or ridiculing the change. Passive resistance involves participants verbally agreeing to participate but not following through, or pretending not to know what is happening. In order to understand and address resistance issues, it's important to understand the reasons behind that resistance. Hultman further notes that understanding a person's state of mind, which is influenced by facts, beliefs, feelings, and values, will help determine the reasons behind the resistance. He lists six major factors contributing to resistance: no perceived need for change; fear the change will be detrimental; concern that the risks outweigh the benefits of the change even when there is support for the idea of change; a perception that the change is not the solution to a problem; concern with the process by which the change is being orchestrated; or a belief that the change effort will be unsuccessful. Once the reasons for resistance have been diagnosed, then leaders can begin to address the concerns. Hultman recommends that leaders verify facts, challenge beliefs, acknowledge feelings, and demonstrate how individuals will benefit from the change. Another strategy to support organizational change is to involve the participants in the decision-making and change process (Fullan, 2004; Zimmerman, 2006). People are motivated to change because they want to change (Shellenbach-Zell & Gräsel, 2010). When they are involved in the process they are more likely to see the need and the benefits.

Zimmerman's (2006) research adds "change readiness" to the list of tools principals can use to garner staff support for organizational change. Determining readiness involves being sensitive to teachers' needs and feelings, and gaining their trust. It is desirable to involve teachers in decision making to promote their self-efficacy. Zimmerman encourages trust building by establishing an approach to change that balances top-down with bottom-up decision making.

*Value of Outdoor Education, Best Practices, Current Standards*

The school's former Principal, district administrators, and the School Board initially supported the creation of the schoolyard habitats. The use of native plants was acknowledged as a way to reduce irrigation costs and comply with Green School policies as noted in Danks (2010). In addition, research supports that outdoor learning positively impacts student achievement and behavior in the classroom (Louv, 2005, 2006). There are increasing concerns regarding students' nutritional, physical and emotional health, and participation in learning gardens and other outdoor activities are regarded as remedies to these health issues (Louv, 2005; Kennedy, 2011; Danks, 2014).

In an article in the online series, "The Green Schoolyard Movement: Gaining Momentum Around the World" (2014, pp.2-3), Danks describes the benefits of creating and utilizing natural outdoor areas on school campuses to deliver lessons and allow students to engage in self-directed play:

\*Green schoolyards provide opportunities for students to tune in to their surroundings and get hands-on experience with nearby nature while gaining a better understanding of their own neighborhoods.

\*Green schoolyards foster children's social, physical, and intellectual growth by providing settings for imagination, exploration, adventure, and wonder, and dynamic environments in which to run, hop, skip, jump, twirl, eat and play in active, challenging, and creative ways.

\*Green schoolyards address important environmental issues in ways that even young children can participate in and understand.

\*Green schoolyards teach ecological literacy, invigorate children's bodies, open and inspire young minds, and knit our communities more closely together in the process.

Danks (2010) offers many different examples of schoolyards that have been designed to foster environmental understanding, creative play, and integrated learning opportunities. One of the reasons she provides for developing creative outdoor learning areas for children is that:

Green schoolyards help students mark seasonal changes with the turning of leaves in the fall, the migrations of wildlife, and the length of shadows on the ground, and, in so doing, make them better readers of their surroundings. Instead of learning about these natural processes from abstract descriptions in textbooks read in indoor classrooms, children experience them directly while getting their hands dirty to help improve their own environment.” (p. 5).

Creating natural, innovative educational areas outdoors can help students become reconnected to their natural environment. Citing campaigns from “America's Great Outdoors Initiative, “Let's Move”, and “Take it Outside” as evidence that children need more outdoor experiences, Kennedy (2011), advocates for creating outdoor learning areas for students. Schools should design outdoor activities on their campuses to promote student health as well as learning. Examples of outdoor structures that can be incorporated into the school grounds in addition to gardens and native vegetation areas include:

\*Outdoor classroom seating for a full class and for small groups of students to work together, as well as single seating opportunities dispersed throughout the area where students can sit and write, reflect, or collect data on observations. Log seating should be made of durable wood.

\*Outdoor classroom enhancements such as bird feeders made by students, a labyrinth or maze to provide a calming activity for students, outdoor musical instruments, and grid markings on tables or benches to enable students to measure, sort and count.

In support of outdoor learning areas, Louv (2006, p. 54) acknowledges:

“Students in schools that use outdoor classrooms also do better academically across the board, from social studies to standardized test scores. A 2005 study conducted by an independent research group, funded by the Sierra Club and released by the California Department of Education, found that kids in outdoor classrooms improved their science scores by 27%. Rather than canceling recess and field trips, as many school districts are doing, the evidence suggests that students need more time learning outside the classroom.”

In addition to advocating for outdoor classrooms to improve student achievement, Louv (2005) has coined the term “Nature Deficit Disorder”. Children who spend little time outside, and much of their time inside develop anxiety, stress, and attention issues. He suggests that encouraging students to spend more time involved in physical activity in natural environments promotes positive mental health and alleviates attention issues in school. In his book, *Last Child in the Woods*, Louv remembers a young girl who describes feeling calmer when she is in nature. “Sometimes I go there (outside) when I’m mad--and then, just with the peacefulness, I’m better. I come back home happy, and my mother does not even know why.”(2004, p. 14). Louv also cites a response from a parent of a child with Attention Deficit Hyperactivity Disorder<sup>1</sup>: “Come to think of it, I have noticed his attitude toward going to school has been better, and his schoolwork has been better this past week. I think it’s because spending time at the park is

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<sup>1</sup> From a study of middle class children with Attention Deficit Hyperactivity Disorder by the Human-Environments Research Laboratory in Chicago (p.107).

pleasurable, peaceful, quiet, and calming”. Louv (2012) claims children who play and learn outdoors and in nature are physically and mentally healthier, demonstrate more focused learning, and achieve at higher academic levels than students who spend much of their time indoors

When children learn about and experience their personal natural surroundings and community, it helps to build their identity and foster a sense of stewardship for the environment (Sobel, 1996, 2008, 2013). Designing learning opportunities within the community offers authentic student-centered experiences to which children can relate. “Place-based education” (Sobel, 2008, 2013) allows students to learn and practice real life skills that help them learn about their immediate world. Schoolyards can be utilized in the same fashion as a way to motivate students and involve them in their own learning.

In addition to providing real life contexts for learning in the outdoors, Sobel (2008) advises educators about appropriate ways to introduce complex, often “scary” concepts to children in order to help them to connect to the natural world, and foster a sense of stewardship and responsible citizenry. Children’s cognitive and psychological readiness needs to be considered when planning instruction around conservation and environmental issues. Sobel asserts that while our intentions may be to teach students to protect and preserve natural resources, we may actually cause the opposite to happen by presenting information in the wrong order and at the wrong time. In order to appropriately teach children environmental literacy, children need to first learn about and appreciate their local environment. They need to understand it and care about it before they are taught that it may be in danger. The key words are local and understanding. Often teachers try to promote stewardship by focusing on far away, exotic lands or struggling, disappearing species. Sobel argues that this approach may cause students to exhibit indifference toward conservation efforts when there is no connection between

the child and the location or species, or it may promote feelings of desperate hopelessness at students' perceived inability to effect change.

When a child is cognitively and emotionally ready to tackle more complex issues, Sobel stresses the need to empower the child. When a child feels that s/he can contribute to the solution (by recycling, turning of the water or lights), not only does it teach responsible consumerism it provides a sense of hope instead of hopelessness. Fostering appreciation and understanding of local systems, followed by the ability to address problems and develop or participate in solutions is a strategy that is more likely to lead to stewardship and informed decision making.

Outdoor educational experiences can also facilitate students' participation in their own learning. Milner and Templin (2010) compared constructivist strategies in an outdoor learning laboratory and a traditional classroom. From their studies, the authors concluded that an outdoor learning lab (XELL) provided students with a unique learning environment that allowed them to connect their classroom instruction to authentic experiences with living plants and animals. They also surmised that life science learning labs provide educators with a resource to accommodate the continuum of inquiry based instruction: Their study suggests that life science laboratories in elementary schools support and promote student motivation and learning strategy use, leading them to recommend that school districts attempt to incorporate life science laboratories on their campuses, and that state and federal agencies strive to support and fund such efforts.

In Scotland, "sustainability education" curriculum, which addresses environmental issues in order to promote sustainability, includes both science and social studies, and is usually taught between the ages of 5 and 14 (Higgins & Kirk 2006). In their research, Higgins and Kirk found



that, while there is a need to incorporate sustainability education into the curriculum, there is also competition with other core subjects, which may limit the time teachers devote to this subject. Sustainability education is not a core subject, though pieces are addressed through other areas. The authors argue that it should be included formally, and suggest that outdoor education may be a way for this to happen. Three areas which can be taught in the outdoors are outdoor activities, personal and social development, and environmental education. The focus of the experience will drive formally taught lessons, while the high incidence of 'teachable moments' will allow for instruction in other areas. Both formal, standards-based lessons as well as informal, inquiry based lessons can be addressed outdoors. The authors state that the memories of the experience are strong, and that they are disproportionate to the time spent in the experience. In other words, being outdoors and participating in outdoor activities, even with quite limited time, has a lasting effect on participants compared to instruction over a longer time period in a classroom (Auer, 2008). There is a strong argument and advocacy for sustainability education as part of the formal curriculum (Sobel, 1996, 2008, 2013; Danks, 2010).

Another advantage of outdoor education activities is that they provide opportunities for students to engage all five senses: touch, taste, smell, hearing, and listening (Auer, 2008). Sensory learning allows students to develop a stronger connection to an experience. Traditional learning experiences in a classroom can be enhanced by sensory experiences in the field. Although sensory learning is more common in the elementary grades, it is equally beneficial for older students. Our senses connect us to the learning, creating an experience that will help cement memory. In addition to creating an emotional connection to the learning experience, the long term effect may be a desire to protect and care for the environment because of the emotional connection (Sobel, 1996). When the senses are stimulated, students are more engaged and

involved in an activity, and when the learning goal involves the natural world, concrete experiences are more effective than abstract information obtained through reading or lecture. Outdoor learning facilitates high level thinking activities, such as using the senses to closely observe evidence and make inferences.

Since the purpose of an outdoor learning area is to support classroom instruction (Sobel, 2008, 2013; Higgins & Kirk, 2006; Milner & Templin, 2010), it is important to consider what is being taught. Newly adopted in California are the *Common Core State Standards* (CCSS, adopted in September, 2013) in Language Arts and Math, and *Next Generation Science Standards* (NGSS, adopted by the State Board of Education in August, 2010). CCSS Language Arts Standards include literacy standards in content areas such as science and social studies. Students are expected to be proficient communicators through reading, writing, speaking, and listening across disciplines. From kindergarten through twelfth grade, learners are also required to cite evidence to support their opinions and claims. There is an emphasis on instruction being relevant to the students, which aligns with Sobel (2008), Higgins & Kirk (2006), and Milner & Templin (2010), and that they collaborate and engage in high-level critical thinking. NGSS is designed for inquiry -based lessons. Students are expected to develop deep understanding of science, technology, and engineering concepts through discovery and exploration, and to extrapolate their learning and think critically.

There is an abundance of curriculum and activities to support outdoor, inquiry-based lessons that integrate core academics as well as Health, Music, PE, and Fine Arts. Many of these programs reference California State Standards or provide correlations with CCSS and NGSS. Some programs provide sensory experiences and integrated activities (Sisson, 1982; Basil,

Gillespie-Malone, & Collins, 1997). Others, such as *Project Wet* and *Project Wild*, provide in-depth classroom activities with follow up investigations outdoors.

In addition to standards based, inquiry driven curriculum, having outdoor management strategies and routines is important for focused outdoor learning to occur (Sisson, 1982; Basil, Gillespie-Malone, & Collins 1997). Such strategies include the use of focus activities and an awareness of the position of the sun in relation to where the teacher and students stand or sit (Basil, Gillespie-Malone, & Collins 1997). Focusing activity examples include a moment of reflection, sitting on the ground with eyes closed while listening closely to the surrounding sounds. Another way to focus students is by drawing attention to something interesting that the teacher has brought outside to share or has found. Sisson (1982) recommends guiding young children through the outdoor area by playing “Follow the Leader” as a way of keeping students focused and together.

For teachers who are willing to take students outdoors, there is advice on managing groups which helps reduce potential distractions. It is helpful to provide some type of seating and boundaries to provide structure (Danks, 2010; Kennedy 2011). In Learning Garden Workshops, trainers from the Captain Planet Foundation recommend enlisting the help of a “room parent” when taking students outside. While teaming with another teacher and his/her class may seem like a good idea, the trainers point out that often that the result is often counter-productive because there is still the same ratio of adults to students, except now there are twice as many students, and focusing a large group outside can be challenging. Still, for some students being outside may cause their behavior to be more focused and calm (Louv, 2005).

The literature helps make connections between teacher motivation and willingness to participate in innovative change; the leadership style of the principal and teachers’ motivation;

leadership style, motivation and resistance to change; and teacher motivation and burnout. Research reveals the relationship between teachers' perceptions of time and other factors which affect teachers' participation in innovative change.

Research addressing outdoor instruction encompasses many areas. The physical design of the outdoor learning areas is important in terms of student learning and management. Teachers need to incorporate an additional set of management strategies into outdoor lessons. Authentic outdoor lessons can increase student involvement in the learning process, and some students may be better focused outdoors. Many resources and guides for outdoor learning opportunities are available to support teachers who move learning to the outdoors.

## Chapter 3

### Findings

The initial study began looking at issues of time, behavior management outdoors, and resources and rationale that support outdoor learning. While these issues presented as the obstacles to teacher participation in the habitats, further research prompted me to study organizational change and leadership, teacher resistance to change, and teacher motivation as it relates to change and leadership style. This research led to a directional change in my project, in particular as it relates to leadership, teacher motivation, and organizational change.

While the research on leadership and change focuses mostly on principals, as co-facilitator of the Habitat Team, I took on a leadership role and therefore exhibited my own personal leadership style, as indicated by Fullan (2004) and Vetter (2012) work. My assumption that teachers would be resistant to being asked to participate in extra activities caused me to take on many of the responsibilities of maintaining the habitats and creating curriculum. In doing so, I was leaving my colleagues out of the decision-making process. Because I was doing all of the work, teachers may not have felt the need to help out, a behaviour described by Hultman (1995). If the habitat project was really to be a school-wide project with support and involvement from all teachers, I needed to stop trying to control the process, a notion supported by Fullan (2004). In addition, I needed to stop enabling teachers to continue to passively participate in habitat activities by consistently contributing more time and effort than other individuals, and by assuming they would be resistant to invitations to help in, and learn more about, the habitats.

In our informal survey of the teachers about their reasons for not using the habitats, many of them claimed they did not know what to do, thereby exhibiting passive resistance, and when

offered assistance, refused to participate, indicative of active resistance. These are behaviors consistent with those delineated by Hultman (1995). Teachers showed little motivation to participate in the habitats, regardless of the support the HT offered. Unless they perceived outdoor lessons as a valuable component of their students' instruction, it would be unlikely that they would engage in habitat development, or take their students to the outdoor learning areas, a finding supported by Shellenbach-Zell & Gräsel (2010). While not knowing what to do seemed to be a determining factor preventing teachers from utilizing the habitats, if the other motivational needs were being met then teachers would be more likely to participate. In order to engage teachers in the habitats, the team needed to help them see the value of the habitats in instruction, listen to their concerns, and address those concerns, strategies highlighted by Hultman (1995) and Zimmerman (2006).

Leadership style affects teacher motivation. The habitat project initially began under the leadership of the former Principal. She was a transformational leader who encouraged teachers to share in leadership opportunities. Though she encouraged collaboration, teachers could choose to be autonomous in their development of projects and innovations. The new Principal was a transactional leader. The original school Leadership Team, comprised of representatives from each grade level, did not share decision making with the new Principal who did not solicit input from staff or the Leadership Team before implementing changes or policies. At Land View, teachers were not a part of the decision-making process and were reluctant to participate in a process over which they had no control.

In lunchroom conversations and the informal polling of grade levels, Land View teachers often complained that they were burned out, and did not feel that they had enough control over their instructional and non-instructional time. The district and the Principal determined how

instructional time and professional development time were structured. Teachers already felt overwhelmed with having to routinely assess students, plan for instruction and intervention, collaborate with their peers, and implement the new California Common Core Standards in Language Arts and Math. Even if they felt the habitat project was worthwhile, they were overwhelmed with the daunting tasks already placed before them. As was true in the study by Higgins and Kirk (2006), the teachers were concerned that there was not enough instructional time to fit in “extras”. Core academics are always the primary focus of instruction, this makes it difficult for teachers to risk presenting innovative, non-traditional, outdoor-based lessons. Teachers did not have ample time to actively engage in habitat activities, which contributed to lack of motivation

It became apparent that, while there were other concerns the team needed to address in order to promote teacher participation in the habitats, the HT had little control over the most pressing issues: the teachers had very little control over how their time was spent and what they taught, and non-instructional time was structured in such a way that there was little self-directed time which teachers could use to best fit their needs. The HT needed time to work as a team and with the staff, yet there was little non-instructional time available for those endeavors. The team needed to work with the principal to make time for the teachers to learn how to incorporate the habitats into their instruction, and develop a shared vision about the habitats and their inclusion in the academic program at Land View School.

Another concern with the habitats had to do with behavior management outdoors. Some of the teachers at Land View had observed that students who are more active in the classroom tended to calm down and focus in the habitats, an observation supported by Louv (2005), but the habitats had no seating or visual boundaries to provide structure and focus, recommendations by

Danks (2010) and Kennedy (2011). The team needed to follow through with the original plans to include stump seating and symbolic fencing to provide structure and an area where students could sit down to focus and reflect on learning in the habitats.

Lastly, teachers needed habitat activities that linked to the curriculum and enhanced instruction without taking time away from core academic instruction. The team needed to share research regarding academic achievement through authentic based outdoor learning activities with the teachers and the Principal in order to motivate teachers to engage in outdoor learning with their students, to garner support from the Principal, and to find a way to provide staff with resources and training. Because there was no adopted, published curriculum that supported the CCSS and NGSS, teachers would have to design their own lessons to meet the new standards. As a result, the district recruited curriculum writing teams to develop district-wide integrated core academic lessons and assessments. The team needed to share the resources and recommendations about appropriate place-based learning activities and their advantages with the school site and district curriculum leaders in order to demonstrate how the habitats could be an integral part of the core academics.



## Chapter 4

### Habitat Enhancement and Teacher Engagement

This project was initiated to understand why, after the teachers at Land View School had worked diligently for a year and half to develop three native schoolyard habitats on campus, they then failed to utilize the habitats in their instruction. The difficulties that teachers presented as reasons for their resistance to adjusting instruction to include the habitats were lack of time, concerns about behavior management outdoors, and a lack of curriculum-related activities which could be carried out in the habitats.

The Habitat Team (HT) discovered that these factors were interrelated. They attempted to help teachers resolve the identified problems by providing curricular resources and training, but discovered that it was difficult to find time to meet as a team or with the teachers. The school's Principal had little connection with the project, and provided minimal opportunities for the HT to engage other teachers in habitat related issues. As a consequence, the habitats remained incomplete according to the original plans. Missing elements included seating and physical boundaries. In turn, this contributed to the behavior management issues due to lack of structure. Lack of funds and resources had inhibited the team's ability to follow through with plans to further develop the habitats.

This project inspired the Learning Gardens Team to analyze the systems and factors that impacted the development and implementation of innovative change at Land View School. Through systematic and persistent problem-solving strategies, the Habitat/Learning Gardens Team was able to begin peeling away the layers of teacher resistance articulated by Hultman (1995) to uncover an unforeseen factor: the success of the Learning Gardens Program hinged

almost exclusively upon the involvement and active support of the Land View Principal. It also necessitated a restructuring of the initial Habitat Team.

### *Leadership and Principal's Involvement*

During school year 2013-14, the Habitat Team re-established itself as the Learning Garden Team, and researched and discussed ways that might be effective to motivate teachers to use the outdoor areas for academic purposes. The team successfully facilitated a number of enhancements in the habitats, and fostered in the teachers a new excitement for incorporating outdoor lessons in the taught curriculum. The team provided staff with standards-based academic resources and obtained additional, external funding to enhance the outdoor learning experiences. Norms were established for behavior in the garden areas. One problem remained to be resolved, the issue of time.

Lack of time and active support from the Principal emerged as major limiting factors not only in the progress of the Learning Gardens Program but also as factors that affected teachers' motivation, burnout and participation in the curriculum innovation. Although teachers were excited about the additions to the habitats and the new curriculum, there still was not sufficient time to fully implement the recommendations of the Learning Gardens Team. The team needed direct involvement from the principal and shared the findings of this project with him. As a result, in an effort to develop a shared vision of the curricular significance of the project, the Principal has agreed to become better informed about the Learning Gardens in the next school-year. This could lead to a mutually trusting relationship between staff and the Principal, thereby providing the team with the support to make the Learning Gardens Program successful. A more trusting relationship could also minimize teachers' feelings of burnout, and increase their

motivation to take the time to incorporate garden-based learning into their instruction (Eyal & Roth, 2010).

The Principal has offered support for the Learning Gardens Program through the Land View Leadership Team for the school year 2014/2015, and views himself as one member of this decision making group, actions that mirror those of Fullan's (2004) notions of shared decision-making. The lack of time for planning, collaborating, and implementing changes to Land View's instructional model so as to include garden related activities will be addressed through collaboration between the Principal and the Leadership Team.

“The scariest part is letting go”, states Fullan (2004, p.164) in reference to school leaders' reluctance to relinquish control by sharing decision making with other school staff. The concept of letting go precipitated another step in overcoming obstacles related to teacher participation in the habitats. Fullan's thesis together with the investigation of teacher's resistance to change caused me to examine my own role as co-facilitator of the original Habitat Team. I realized that I had to “let go” of trying to make change happen. Relinquishing control involved considerable risk to my self-concept and a loss of previous personal investment, but importantly, in keeping with Fullan's premise, it allowed new leaders to emerge and take responsibility.

I stopped assuming other teachers did not want to or did not have time to help, a concept explored in Vetter's study (2012), and began inviting non-team members to spend their after school time working on different habitat-related projects. As a result, the Habitat Team evolved into the eleven member Learning Gardens Team that represents all grades, and includes the cafeteria manager, Boys and Girls Club site coordinator, plus the school counselor.

*Enhancing the habitats and motivating teachers*

When the first the Fish and Wildlife School Yard Habitat Grant was received, a multi-phase plan was devised to build native habitats with bird and bat boxes, symbolic fencing intended to provide boundaries and structure but to keep anyone or anything in or out of the areas. An agricultural area sandwiched between two habitats was part of the final phase of the project. Unfortunately, the grant could not be used to purchase fencing supplies nor a vegetable garden, with uncertainty over the bat and bird boxes installations. On several occasions the team consulted with the district facilities manager about obtaining materials, despite his support for the concept of the native habitats nothing ever happened. Nobody had seemed to have time to actively pursue finding materials or money, and time kept passing.

Just as this project began, the team was offered the opportunity to apply for a large grant through the Captain Planet Foundation. This grant would provide the agricultural area we wanted, could help us with some enhancements to the habitats, and included curriculum and professional development for the staff. It also meant that to be funded we had to have a solid team, with demonstrated commitment from a majority of the school's teachers as well as the Principal's support. The team decided the Learning Gardens could be the mechanism to renew interest in the outdoor learning area and get some of the additional support we needed. In September, 2013, we were successful in securing \$2,500 for curriculum, professional development, and garden support. A Master Gardener would build the raised beds and guide us and a volunteer would care for the gardens during the summer recess.

The team made the announcement to the staff who reacted excitedly. Though it would be a while before training took place (January) or the beds built (February), the process of redefining the team and its goals began. The Habitat Team continued as a four member team, meeting regularly to talk about the habitats with other teachers dropping into the meetings to

keep abreast of the new developments. The team began to look for ways to provide staff with activities for the garden and started to request time to talk about the habitats at staff meetings which was granted albeit very limited. The early efforts were productive in systematically trying to resolve teachers' issues, but not as effective as hoped. We passed out activity ideas, but not much changed....until a two-day teacher training event in January, 2014.

Eight teachers (representing all grades) participated in the two-day training from the Captain Planet Learning Gardens Program: the four who had been part of the original habitat project plus four others. Shortly thereafter, the Master Gardener, who had been one of the trainers, came to the school site to help with design and planning. The team wanted to include fruit trees in the Learning Gardens and though Captain Planet could not fund it, the gardener contacted Common Vision, an organization that helps establish fruit tree orchards, or "Food Forests", on school campuses. This service was not free, and we did not have funds, so the team turned to Land View's Parent-Faculty Organization (PFO) for funding.

New leadership was developing. The teachers who had trained with the Captain Planet Foundation joined forces with the Habitat Team, which was renamed the Learning Gardens Team, incorporating the development and management of the Native Habitats with our new Learning Gardens. The third grade teacher from the Habitat Team emerged as the Learning Gardens' Coordinator. Teachers who had attended the Learning Gardens workshops presented to the whole staff the plans for the edible gardens and fruit tree orchard along with the curriculum materials that had been received. Land View's PFO president was invited to the staff meeting so that she could then explain the project to the Executive Board of the PFO when they met to decide about funding the project. Teachers who had attended the trainings worked with each of their grade levels to introduce curriculum materials. Teachers reported that they liked

the curriculum, they were excited about the gardens and orchard, and were motivated to use the gardens in their instruction.

At the beginning of this project installations included a Pollinator Habitat in the kindergarten section of the school, a riparian habitat (without water) at one end of the primary playground, and a Channel Islands-inspired coastal scrub habitat at the other end of the primary playground. Between these two habitats there were swings and other climbing equipment. Behind the swings, there was an empty, unused, full sun, dead grass and weed area. The water source was located between 40 feet to 120 feet from the habitat sites, and water was delivered via three separate hoses connected together to form one long hose. A vegetable garden area had been sacrificed in order to install the habitats but never replaced as planned. There were no visible boundaries or seating areas in any of the habitats.

In February, 2014, the maintenance department provided irrigation access in the empty space between the two habitats, and the team sponsored an after school planting event with 111 first through fifth grade participants from the Boys and Girls Club after school program.

On a Friday afternoon at noon, the Master Gardener arrived to begin building the raised beds. The reporter from the local newspaper arrived at 12:30 to interview staff and students. An hour later the biodiesel-run bus from Common Vision pulled into campus with materials and volunteers who coordinated with the team and the Master Gardener to integrate the raised beds and the orchard. While tables were set up for sign painting, volunteers prepared the orchard area for planting, and at 2:00 the final wave of Common Vision volunteers arrived.



Future vegetable garden and orchard site with newly installed spigot

The first group of 50 students came out to begin work. Half of the students painted signs, while half planted trees. As the students painted or added compost to the pre-dug holes, over 15 Common Vision volunteers guided the children through creative questioning laced with information about ecology and about the trees that were going to be planted trees. Students sang “Happy Birthday” as the plants were moved into their new homes, and some named the trees as they planted. An hour later, the second half of the students took their turn finishing the signs and planting. While this group worked, volunteers installed the drip irrigation system that would water the orchard, and staff from Land View School and the Boys and Girls Club participated in an hour-long training in the care of the latest addition to campus grounds. As the busyness continued, so too did the appearance of fresh faces to watch the children work and to learn about the new orchard.



Boys and Girls Club students paint signs and prepare to plant the fruit trees as raised beds are built and placed among the trees.



Students break up clumps of soil before depositing them around the tree roots (left). The barren space between the two Native Habitats is transformed into space that will provide fruit and vegetables to the Land View students (right).

While the orchard was taking shape, the Master Gardener, a community volunteer, and some of the teachers built and placed the raised beds. The day was rapidly coming to an end and we agreed to wait until Monday morning to decide on the final placement of the beds within the orchard before filling them with soil. As the sun disappeared and the children left for home, volunteers completed the final phases of irrigation installation, whitewashing the young tree trunks to protect them from sunburn, and adding mulch around the bases to help retain water.



Monday morning brought excitement and wonder as students visited the newly installed vegetable garden and Food Forest. Throughout the day, teachers took their classes out to view the transformation. The students from the after school program in each grade were the docents, explaining to their classmates and teachers the process in which they had participated and the role they played in the enhancement of their school habitats. They also taught their classmates how to move through the gardens so that the newly planted trees would not be damaged.

During the week, various classes, along with Boys and Girls Club, filled the beds with the soil that had been delivered the previous week, and teachers began planning their grade level gardens with their classes. Captain Planet provided seeds, and an Agricultural Center in a nearby town provided free seedlings to the school. A mother of one of the teachers learned about the new gardens from a local radio program that reported the story from the local newspaper. She had connections to a grower and donated a dozen squash plants and offered for when we were ready. Receiving the Learning Gardens grant was not only the catalyst for teachers' participation but also initiated broader community involvement.

An area that once had been a barren and wasted space was now ready to provide healthy food along with engaging learning opportunities. In that space, there are five 3X6 foot raised vegetable beds, three artichoke plants, a dozen heirloom squash plants, and 18 fruit trees. Two teachers began experimenting with an alternative way of creating a raised bed which is referenced in second grade curriculum: hugelkultur requires less water, provides rich nutrients, and is built on top of garden debris such as tree limbs and other plant cuttings. Native California blackberries are planted in the hugelkulture, which is located between the Riparian Habitat and the vegetable garden.



Students from the after-school Boys and Girls Club dig the hole for the hugelkultur



Tree limbs are placed in the hole (left), then covered with soil (right).

Symbolic fencing in the form of native plants now acts as a hedge around part of the riparian habitat in keeping with Danks' (2010) suggestions. Native wild California grapes are planted around part of the coastal scrub habitat, and additional native plants have been added to both the riparian and the coastal scrub habitats to replace plants that died and to round out the vegetation. Milkweed plants are being added as a resource for the Monarch butterflies which students can study in-depth by monitoring using citizen science programs such as Journey North and the National Phenology Network. The school has begun to arrange cut up eucalyptus logs as seating in a shaded area in the riparian habitat which can now be utilized for independent reflection or group lessons.



First delivery of eucalyptus stumps to provide seating.

The Learning Gardens Team (LGT) involved the Parent Faculty organization (PFO) with the initial goal to secure, develop, and enhance funding for the orchard. However, including the PFO in the process has brought additional benefits. The PFO has expressed an interest in exploring the possibility of upgrading other play yard areas. Currently, there is no formal, planned seating provided on the play yards. The PFO president is interested in pursuing not only a seating design but also addition of features such as natural climbing areas and outdoor musical features to supplement the traditional playground features of swings, slides, and climbing equipment. Danks (2010) and Kennedy (2011) propose that these features would encourage creativity by providing spaces where students could sit and read, write or draw.

The physical areas have been enhanced substantially, but are still incomplete. The school has yet to place identifying signs at each plant and the original plans included installation of bat, kestrel, owl and native bee boxes. The team has added to the plan worm composting bins, rain collection devices, additional seating and small table areas throughout all of the Learning Gardens, and a hand and vegetable washing station that could provide water to the contoured area of the riparian habitat. Ways to obtain a tool shed and more tools through donations or more grants are being considered.

Although the kindergarten teachers have begun to participate in the Learning Gardens program, they have yet to make use of the Pollinator Garden specifically set up for them. Time needs to be found to provide training in how to effectively use and maintain the gardens. In addition, they have no raised bed in which to plant. When the initial raised beds were built, only five were provided. Kindergarten had raised beds built for them by a non-profit organization as a community service project, but they because they are too high, and despite a decision to lower

them to make it more accessible, the work has not yet been completed. Once again, the usual enemy, lack of time, is responsible.

The team divided the habitats into sections with each grade level (first through fifth) adopting a section to maintain as a way of sharing responsibility. All grade levels first through fifth have their own raised beds. Teachers from first through fourth grades have been visiting the gardens to tend their “crops”. With limited space in the raised bed area, students take turns tending their vegetables and observing or maintaining the habitats. It is not unusual now for three classes to be in the Learning Gardens at the same time, with all students engaged in some garden related task. During the last planting day, when our newest additions were installed, approximately nine classes of 24 students rotated through the gardens to prepare soil and plant more than 40 plants.

### *Student Involvement and Behavior Management*

Students in first through third grade regularly check on their plants, and provide updates to their teachers and each other of their observations of which trees have flowers, how much bigger the vegetables are getting, and what types of insects they are finding. Students who have been frequenting the gardens have become mentors, teaching other students how to mulch, pick up trash, which weeds to pull, and how to plant. They’ve also become the “custodians” of the insects, gently moving them out of harm’s way when there are lots of students walking in the gardens.



Students keeping the Riparian Habitat clean.

Providing access to the Learning Gardens during recess is a goal of the team, however, this has yet to be achieved because of safety and management concerns when students visit the gardens unsupervised. Tall plants can hide some students from recess and lunchtime supervision staff. The team recognizes these concerns, and needs support from the Principal and Land View Leadership Team to address them. LGT members are considering monitoring the gardens on some days so that students can be supervised while they explore during recess times. Other ideas include assigning students as “Garden Monitors” or adding extra supervision staff.

The Learning Gardens are located on the primary grade school playground. Fourth and fifth grade students have realized that they do not have the same access as the primary students and want to install a native habitat somewhere on their own play field. Some students have taken the initiative to research and list plants that they want, and are discussing where the habitat should be located. This has prompted the team to acknowledge the need to include students in

the continued development of the gardens. The team needs to work with the Principal and other teachers to include as many students from as many grades as possible, perhaps through student council or grade level garden clubs.

Teachers have begun to implement the idea of “garden etiquette”. Teachers who frequent the gardens are stressing the importance of calming students as they cross the line from playground to garden, and some have students engage in focusing activities before beginning garden work or outdoor lessons begin. The Gifted and Talented class (GATE) has written a list of garden “Do’s” that will be published in their newsletter and also posted on a permanent garden sign. The list includes statements to encourage students and other visitors to respect the developing fruits and vegetables, to watch out for wildlife, to protect the gardens and keep them clean.

Teachers found that teaming with another class was a way to provide more supervision and reduce potential problems caused by increased numbers of students. They have been teaming as they come to the garden finding it to be a viable strategy for managing students when outdoors. Because there is so much space, they find there is always something for students to do in the habitat while others are employed in the garden and orchard. Students from classes with more garden experience team with students from classes who are newer to the gardens. This has been an opportunity for students to become leaders and teachers, making larger group management much easier. Teachers have observed that when the students are in the gardens and have a task, they are focused and engaged, including students regarded as distractible and disruptive in class.

*Curriculum and Instruction*

Captain Planet provided three lessons at each grade level that incorporate the Learning Gardens in standards-based activities. In addition to using these lessons, some teachers have begun using other activities that connect the gardens with lessons in the classroom. First grade and third grade are both studying plants, and have been using the gardens as part of their curriculum. Second grade is preparing for a unit on economy, and will be studying agriculture as an industry. They are using the gardens to help students learn about pollination and how pollinators are adapted to the flowers they visit. One second grade class is using the outdoor areas to study water, wind, soil and erosion, as well as concepts of biodiversity. Others are using the habitats to stimulate descriptive language in English Language Development lessons, and math skills such as measuring, counting, calculating perimeter and area, and recognizing geometric shapes and properties.

Students are being encouraged to design activities to use in the gardens. The GATE students recently took a field trip where they learned about restoration efforts in local wetlands. They brought back seeds and cuttings to add to the habitats. One of the cuttings is usually found in the transition zone of a coastal wetland where the soil has a high salt content. Some of the students are going to try to get this “pickleweed” to grow in our Coastal Scrub Habitat – a new research garden is being created!

The district is in the process of writing integrated curriculum to meet the new CCSS and NGSS standards. Land View teachers involved in the habitat projects are cognizant of the relationship between the gardens and the adopted curriculum, but so far the school site is the only one in the district with outdoor Learning Gardens. Two team members from Land View



School were asked to present hands on, NGSS related lessons, at a district wide professional development day. Evaluation feedback on the presentation indicated that teachers in the district want more professional development in the area of developing and providing more authentic, integrated, inquiry based science experiences for their students. Land View's recent successes have inspired one other school to apply for funding.

Two teachers at Land View School have volunteered to explore ways to integrate technology into the gardens using QR codes and similar applications. The team has discussed how classes could create visuals that would be placed in the gardens to provide some kind of information, either as a collaborative student project related to lessons in their classroom, or as a student developed interpretive project for the whole school.

The team interest remains in developing a Learning Gardens Resource Handbook that would include ways to adapt district approved lessons for use in the habitats, and guide staff in the application of technology resources. The Resource Handbook will include teacher created lessons and information specific to Land View's habitats and plants plus maintenance recommendations, as well as provide links to materials from other programs' resources.

## Chapter 5

### Conclusion

The results of this project support previous findings that principals and other school leaders have substantial influence on teachers' participation in innovative change (Hultman, 1995; Fullan, 2004; Zimmerman, 2006; Eyal & Roth, 2010; Vetter, 2012). That influence can be detrimental, even when school leaders are supportive of change. For example, at Land View, the Habitat Team members made progress toward realizing greater teacher participation in the habitat project when the team facilitator distributed more responsibility to team members. Additionally, when the HT invited other teachers to participate in the Habitat Team without assuming the invitation would be perceived as an imposition on teacher time, more teachers became involved in the development of the Native Habitats and new Learning Gardens. Teacher leaders who promote change at their schools should consider inviting other teachers to become a part of the process.

At Land View, as in other studies (Hultman, 1995; Fullan, 2004; Zimmerman, 2006), teachers may acknowledge their reasons for resisting change, but even when those reasons are favorably addressed the Principal's level of involvement with the innovation can impact its success. Although the Principal of Land View allowed the team to work on the Native Habitat and Learning Gardens projects, he had little understanding of their purpose or how the gardens related to the core curriculum and the new standards. He was unable to sufficiently support the project so that although the Habitat/Learning Garden Team found ways to address teachers' resistance and stated concerns, the issue of time remained a major obstacle. Without the Principal's participation in solving the lack of time issues, other issues could not be satisfactorily

addressed. This finding suggests that teachers attempting to implement change need to actively solicit the involvement of the Principal, at least at the ‘understanding level’ of an innovation, in order to find avenues to solicit support from their colleagues. Lack of time is an issue with which most schools struggle (Collinson & Cook, 2000), and teachers who are implementing innovations need to work with their school leaders to address how the time issue impacts teacher participation in innovative changes. This can be accomplished through what Fullan (2004) terms shared leadership, and aligns with Zimmerman’s (2006) emphasis on the importance of helping teachers plan for change.

This project also highlights that outdoor learning environments have the potential to provide rich resources that support the current standards and trends in education. Implementation of CCSS and NGSS requires teachers to restructure their instruction to include authentic inquiry learning experiences. Teacher and student participation in the gardens at Land View is consistent with findings from Higgins and Kirk, (2006); Milner and Templin (2010); Sobel (2008, 2013) and Louv (2004, 2006, 2013), as well as from the *Next Generation Science Framework*, that well designed outdoor learning areas encourage authentic learning and should be utilized by teachers as part of the core academics.

The Learning Gardens have demonstrated how students and teachers can work together to develop relevant learning opportunities on a school campus that connect outdoor learning experiences to curriculum and instruction in the classroom. Land View students share their observations and ideas with their teachers, which allows for student and teacher collaboration on learning projects. This experience showcases the importance of “teachable moments” as described by Basil, Gillespie-Malone, and Collins (1997), Milner and Templin (2010), and Sobel (2013). Learning becomes more student-centered as students engage in outdoor exploration.

Teachers who incorporate outdoor learning into their core instructional curriculum need to be flexible in their planning to allow for spontaneous as well as coordinated student involvement.

Finally, the design of Land View's outdoor learning areas was an important consideration when teachers were failing to use them as instructional resources. When the team followed suggestions by Danks (2010) and Kennedy (2011), teachers used the gardens in their instruction more frequently. Even with plants flourishing, the Native Habitats of Land View School were underused because they did not provide the structure needed to adequately focus students and their learning. Schools planning Native Habitats or Learning Gardens should consider the structural components of the outdoor learning environment equally important as the plants that grow there, and have those structural components available when the habitats or gardens are ready to be installed.

As a result of this study, Land View Learning Gardens have caught the attention of the teachers and the Principal as viable learning resources. Their continued development and future use will depend on the support provided by the Principal as well as the motivation of the Land View teachers to continue to design their instruction to incorporate authentic, place-based learning opportunities in the Native Habitats and Learning Gardens.

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