

Outdoor Classroom for Davis Joint Unified School District's Children Center

By: Tricia Ching Ting



Outdoor Classroom for Davis Joint Unified School District's Children Center

A Senior Project

Presented to the Faculty of the Landscape
Architecture Department of the University of
California, Davis in partial fulfillment of the
Requirement for the Degree of Bachelors of
Science of Landscape Architecture

Accepted and Approved by:

Senior Project Advisor, Claire Napawan

Faculty Advisor, Patsy Owens

Faculty Advisor, Gerrie Robinson

Faculty Advisor, Moncia Perrone

Abstract

“Outdoor Classroom for Davis Joint Unified School District’s Children Center” is a project dedicated to creating and developing outdoor learning classrooms for children and teachers. It is meant to enhance the school while creating a positive, inspiring, and natural learning environment that affects both the behavior and performance of children and teachers. In this project, I hope to bring out the importance of outdoor classrooms and allow students to enjoy being outdoors while appreciating and learning about nature. Raising their environmental awareness is necessary to protect the Earth. Also, the learning experience is important to children because it helps shape the vision and dream of the future generation which contribute to a more successful society.

Acknowledgements

I would like to give special thanks to all my committee members: Patsy Owens, Monica Perrone, and Gerrie Robinson for all their critiques, help, and comments. I would also like to thank my senior project advisor, Claire Napawan, for her useful comments and guidance.

I would also like to thank those at the Davis Joint Unified School District's Children Center for giving such a great opportunity to work in this fun and exciting project.

Last but not least, I would like to thank my fellow LDA classmates for wonderful memories and friendships.

Table of Contents

Abstract	iii
Acknowledgements	v
Table of Contents	vii
List of Figures	viii,x
Chapter 1- Introduction	1
Design Goal	1
Delimitations and Limitations	1
Definitions	1,2
School Information	2
Site Analysis	3
Chapter 2 – Methodology	5
Case Studies	5
Subject Studies	6-9
Chapter 3- Data Collection and Results	10
Faculty Input	10
Student Input	11,12
Data Result	12
Chapter 4 – Final Design and Program	13
Concept and Program Elements	13-15
Design Process	16,17
Final Design	18-21
Chapter 5 – The Sensory Garden	22
Planting Plan	22,23
Planting List	24,25
Chapter 6 – Conclusion	26
Bibliography	27,28

List of Figures

Chapter 1: Introduction

- Figure 1.1 (p1) Site location - E and 8th Street Davis, California
- Figure 1.2 (p2) Site Analysis of the Children Center's Playground
- Figure 1.3 (p3) Bike path merged into fences
- Figure 1.4 (p3) Uninspiring play structure
- Figure 1.5 (p3) Neglected planter boxes

Chapter 2: Methodology

- Figure 2.1 (p4) A spatial playground model by Isamu Noguchi
- Figure 2.2 (p5) Action Area
- Figure 2.3 (p5) Tunnel through a slope
- Figure 2.4 (p6) Music and movement area
- Figure 2.5 (p6) Garden Area
- Figure 2.6 (p6) Grass hiding place
- Figure 2.7 (p9) Site plan Early Childhood Lab School

Chapter 3: Data Collection & Result

- Figure 3.1 (p10) Eg. of natural musical instrument
- Figure 3.2 (p11) Eg. of natural child size benches
- Figure 3.3 (p11) Children drawing in art workshop
- Figure 3.4 (p12) Drawing of a butterfly and a girl
- Figure 3.5 (p12) Drawing of sand box and water slide
- Figure 3.6 (p12) Drawing of tire swings
- Figure 3.7 (p12) Drawing of sand box, slide and tree

Chapter 4: Final Design & Program

- Figure 4.1 (p13) Eg. of Insect Observation Station
- Figure 4.2 (p13) Eg. of Natural Art Area
- Figure 4.3 (p14) Hiding Mount by Isamu Noguchi
- Figure 4.4 (p14) Sculpture Slide by Isamu Noguchi
- Figure 4.5 (p14) Sense Garden: Smell

- Figure 4.6 (p15) Inside the playhouse
- Figure 4.7 (p15) Playhouse inspiration
- Figure 4.8 (p16) Bubble Diagram of first design concept
- Figure 4.9 (p17) First design concept sketch
- Figure 4.10 (p17) Second design concept bubble diagram
- Figure 4.11 (p17) Clay model study about topology
- Figure 4.12 (p18) Master Plan
- Figure 4.13 (p20) Perspective looking from East side
- Figure 4.14 (p21) Aerial view
- Figure 4.15 (p21) View looking at hiding mount and sloped amphitheater
- Figure 4.16 (p21) View looking at sculpture slide, pathways and bamboo fountain

Chapter 5: The Sensory Garden

- Figure 5.1 (p22) Planting Plan
- Figure 5.2 (p24) Society garlic
- Figure 5.3 (p24) Lamb's ear
- Figure 5.4 (p24) Star jasmine
- Figure 5.5 (p25) English lavender
- Figure 5.6 (p25) Cabbage
- Figure 5.7 (p25) Rosemary

Chapter 1

Introduction

Design Goal:

The goal of this design project is to create and develop outdoor learning classrooms for children and teachers at the Davis Joint Unified School District's Children Center, Davis, California. This project is meant to enhance the school while creating a positive, inspiring, and natural learning environment that affects both the behavior and performance of children and teachers. In this project, I hope to bring out the importance of outdoor classrooms and allow students to enjoy being outdoors while appreciating and learning about nature.

Delimitations and Limitations:

This study will not include risk assessment for the trees at the school site. The reason for this is that the school is government funded and there are scheduled checkups done by arborists regularly. Also, this study will not include sets of construction documents. A limitation of this study is the cost analysis, since the children's center is a government funded school for only low-income children, therefore, they do not get much grant money budgeted for new play equipment.

Definitions:

Some terms that will be used frequently throughout this project are as follows:

- 1) Environmental psychology - studying the relationship between the environment and human behavior in different environmental settings, such as natural, manmade, and learning environment.
- 2) Behavior - the action of different people, including the children, teachers, and parents.
- 3) Outdoor classroom - a learning environment outside the classroom.

School information:

The Davis Joint Unified School District Children Center is located at E and 8th street, Davis, California and is next to the Da Vinci High school.(Fig. 1.1) The children center used to be the Valley Oak elementary school, but it is now the state funded preschool for low income families. Currently, there are 90-95 children enrolling in the center.



Site Analysis:

My project's site is the children center's playground. There are two entrances to the site; one is located at the North-east end and the other one is at the North-west end. The playground is fenced and is located next to a parking lot. The indoor classrooms are located near the North end of the playground. Next to the classroom are the planter boxes and a small playing structure. There are two main play structures in the playground. One of them is at the South-east corner and consists of slides, stairs, and some climbing features. It is located in the middle of the looping bike path, which is next to the fence. Separated by a pathway, the other playing structure is located at the Southwest of the playground and it is situated in bark mulches with stairs and a little bridge. Next to the structure is an open grass area for children to run around. (Figure 1.2) The site is mainly used during play time for children, which is 10-11:30 am and 1:30-3:00 pm.

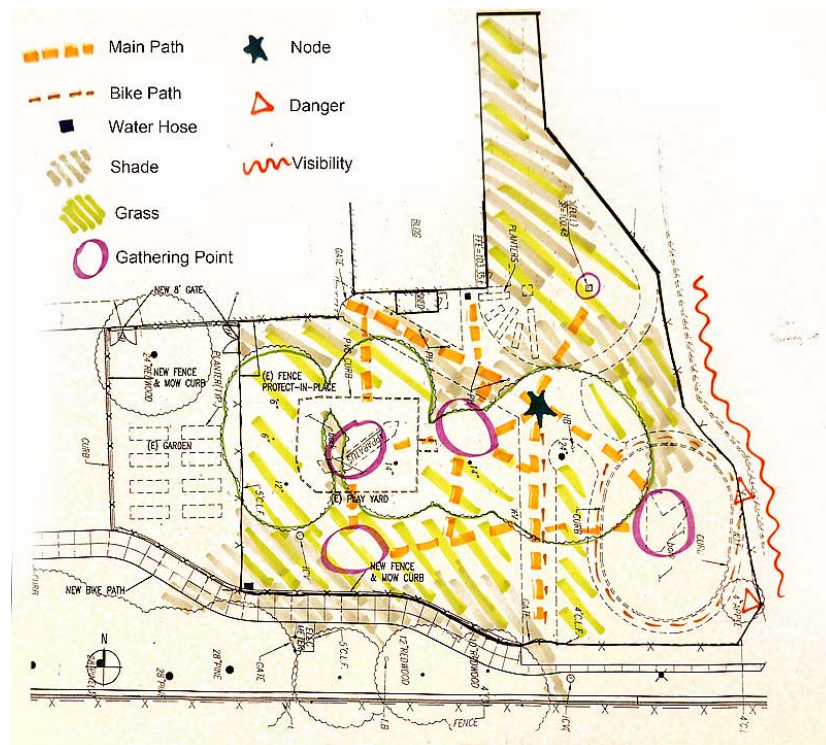


Figure 1.2 Site Analysis of the Children Center's Playground

Opportunities:

Good shades from trees

- Most trees cover the areas of high usage by children

Good access

- Two entrances



Figure 1.3 Bike path merged into fences

Constraints:

Bad design

- Bike path merged into the fence (Figure 1.3)
- Unnecessary pathways

Dangerous

- No sense of privacy and no screening from plants (children can be seen easily by strangers)



Figure 1.4 Uninspiring play structure

Uninspiring landscape structure

- Just stairs, bridge and slides
- Neglected planter box (Fig. 1.5)
- Adult size benches not meant for pre-school children

No sense of nature

- Everything is plastic (Fig 1.4)
- No water element
- No stimulation from plants



Figure 1.5 Neglected planter boxes

Chapter 2

Methodology

Subject Study:

Children's way of knowing: Learning through experience

In this book, topics such as how indoor and outdoor experiences affect children development were discussed. I mainly looked at the importance of outdoor learning environment for young children. One main point that the book had was that children younger than seven started to develop topological representation of spaces. Pre-school children began to construct cognitive models of reality form and they could benefit from active exploration. Outdoor classroom provided the experience and framework for children to develop a sense of space and the knowledge of the physical and spatial environment. Landscape equipments and toys were essential for children to develop their spatial cognition. For instance, trees, wood logs, structures, slides, and bikes helped children to understand their surrounding environment better.

Most people thought that children did not begin learning until they were in elementary school, but from this book, I learned that pre-school children also start their learning processing through interactions in outdoor environments. This explained why school play yard was essential to children's development. (Robertson)

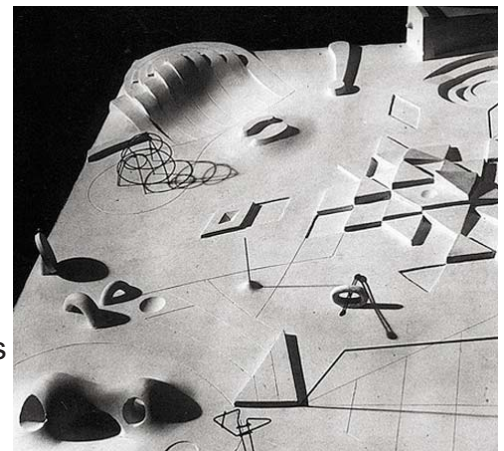


Figure 2.1 A spatial playground model by Isamu Noguchi

Case study:

The Early Childhood lab school of the UC Davis Center for Child, Family Studies.

Located at A and 1st street, the center is situated near the UC Davis Campus and the downtown area. Currently, the Early Childhood lab school program includes 10 infants, 12 toddlers, and 60 preschoolers. The school includes three different grounds including the infant (8-15 months old) playground, the toddler (20-27months old) playground, and the pre-school playground. I looked into the pre-school playground more thoroughly because it is designed for children who are 2-5 years old, which is more relevant to age of the children in DJUSDCC.

I went there in April and the school's administrative assistant gave me a tour of the site. There were many different areas in the playground, such as the action area, the sand area, the reading hut, the garden, the climbing area, the messy materials area, the music and movement area, and the bike path. The action area was inside a bark mulch box, so that children would not easily get hurt badly, even if they fell onto the ground. There was a tire swing, parallel bar, see-saw, and slide inside the mulch box for different kinds of children activities.(Fig 2.2)



Figure 2.2 Action Area



Figure 2.3 Tunnel through a slope

In the sand area, there was a cloth shelter above the sand box for shade. Next to the sand area, there was a chicken coop so children could learn how to take care of domesticated animals and from where the egg came. Then there was the garden area with planter boxes of different plant species and a pathway in between rushes and deer grass so to give a feeling of being inside the nature and it was a good place to hide when playing hide and seek.(Fig 2.5, 2.6) Next to it was the climbing area with plastic rock climbers, a tunnel/tube that went across a slope(Fig 2.3), wooden logs for balancing, and a bridge that linked to the little bamboo forest. In the messy material area, there were all kinds of natural materials including the bamboo, wood, bark mulches, and branches. Then, there was the music and movement area with a wooden deck for performance, wooden logs for chairs, wooden wind chime, bird feeder to attract birds to sing, a metal can for drum and beat, and a wooden xylophone to create melodies.(Fig. 2.4) In between the music area and the material area laid the lopped bike path for movement.



Figure 2.4 Music and movement area



Figure 2.5 Garden Area



Figure 2.6 Grass hiding place

The UC Davis Center for Child and Family studies is administered by the UC Davis Department of Human and Community Development and Division of Human Development and Family Studies. The Center serves as a laboratory for the development of experimental programs for children and families, as an observation site for UC Davis students and community members, and as a research facility for UC Davis faculty and graduate students. The experimental programs, observation opportunities and research of the laboratory are intended to advance the field of child development. (Early Childhood Lab School) This center is a great opportunity for research involved with children psychology and children development to learn how outdoor classroom can provide an educational and positive experience to pre-school children.

There are three qualities I learned from the design of this school: education, creativity and identity. Education plays an important role in an outdoor classroom. By having a garden area with chicken coop, the children can learn about food production and life cycles of plants. It also gives social opportunities for children to interact with teachers and other classmates.

Another quality in the school's design is creativity. I liked how they used small wooden deck as a performance stage and a recycled metal bin as drum in the music area. I also liked how they used natural or recycled materials to make different play equipments, such as a tunnel, which is a recycled giant metal tube, natural wood for seating, and natural wooden logs for balancing.

Last but not least, there are distinctive identities of each section in the outdoor classroom. Each section in the playground has its own purposes. For instance, in the action area, children could climb up and down and run around, which showed a lot of action going on. In the

sand area, there was obviously the sand box, and there were musical instruments in the music area. All these areas gave children a clear vision of categories of what they were doing or playing with.

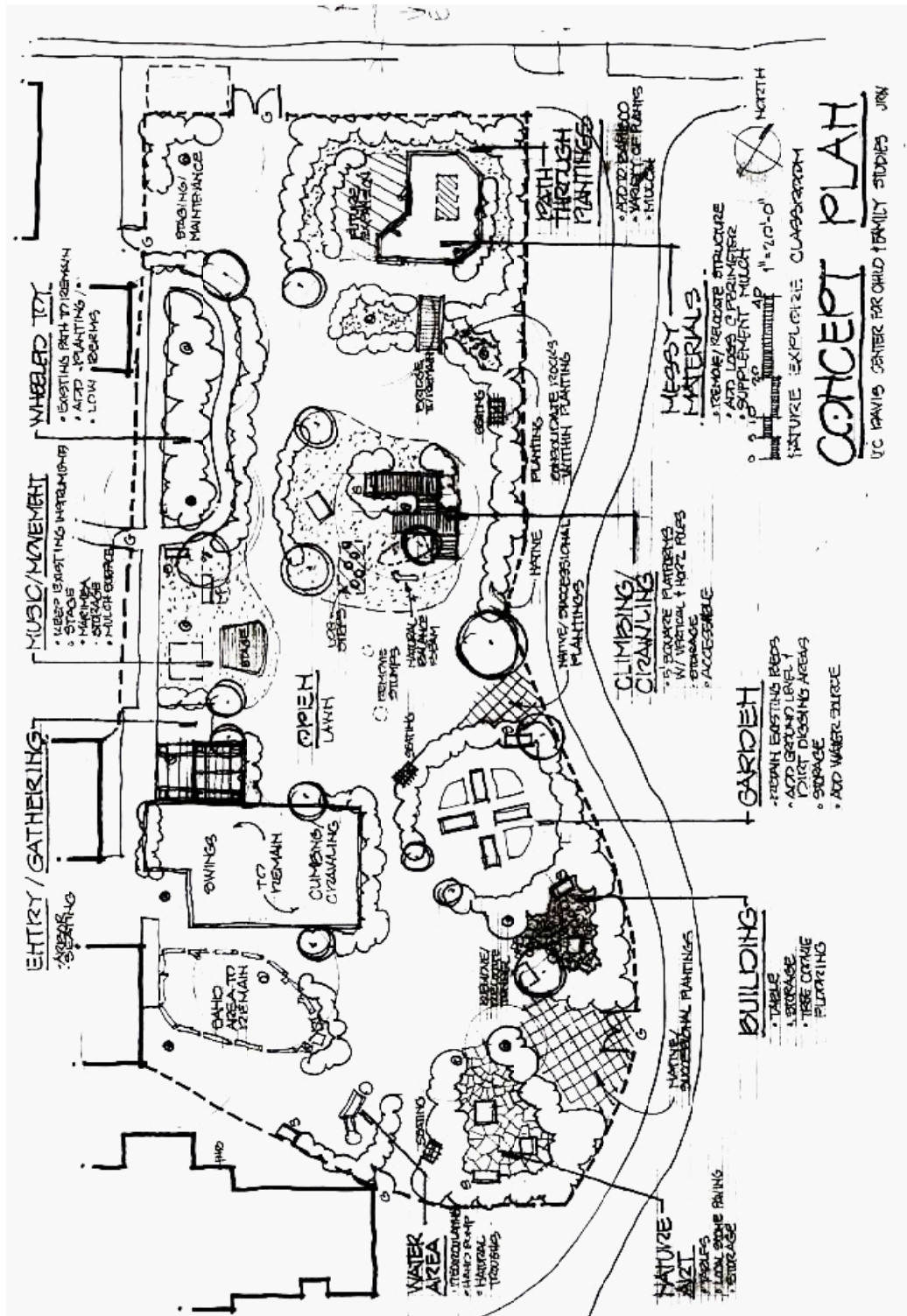


Figure 2.7 Site plan Early Childhood Lab School

Chapter 3

Data Collection & Result

Faculty Input:

I talked to two teachers from the children center and talked with them about their vision for the children playground. The list below is the elements they would like to see in the playground:

- 1) A sandbox
- 2) More natural equipments
- 3) Child size picnic tables and benches(Fig 3.2)
- 4) A water element
- 5) A storage for toys and play equipment
- 6) A safer bike path
- 7) A climbing structure
- 8) Grass area for action
- 9) A quiet area for book reading or drawing
- 10) Real visual boundaries for children
- 11) Musical instrument playing equipment(Fig 3.1)
- 12) Bird feeders
- 13) Garden area
- 14) A roof for shade
- 15) Playhouse area



Figure 3.1 Eg. of natural musical instrument

Student Input:

I held an art workshop with the pre-school children. I liked the idea of an art workshop because I got to interact with them and see what their visions were. They are the primary users of the play yard so their visions are important to the design. I asked them to draw out their dream yard or what they would like to have in the playground. (Fig 3.3) Since they are only 2-5 years old, their pictures looked very abstract. So the teacher asked what their ideas were and wrote down the explanation on the back of the drawing. The elements they would like to see in the playground were as below:

- 1) A sandbox(Fig. 3.5)
- 2) A rope swing(Fig. 3.6)
- 3) A long slide
- 4) A pond
- 5) A teeter- totter
- 6) A low monkey bar
- 7) A rolling slide
- 8) A balancing bar
- 9) A gigantic ball
- 10) Roller coaster
- 11) Butterflies(Fig. 3.4)
- 12) Trees(Fig. 3.7)
- 13) Flowers
- 14) Starfish



Figure 3.2 Eg. of natural child size benches



Figure 3.3 Children drawing in art workshop

Although some features such as roller coaster and star fish would not be feasible to implement, I am surprised by their imaginations and creativity. A rolling slide, balancing bar, and monkey bar sound very fun and interesting.

Data Result:

Based on what I learned from the teacher and children, some features that I am going to incorporate in my design program includes a sandbox, a water element, a balancing bar, a slide, some music instruments, a shelter, a teeter – totter, a garden to attract pollinators, child size benches, bird feeders, storage, and a quiet or picnic area.



Figure 3.4 Drawing of a butterfly and a girl

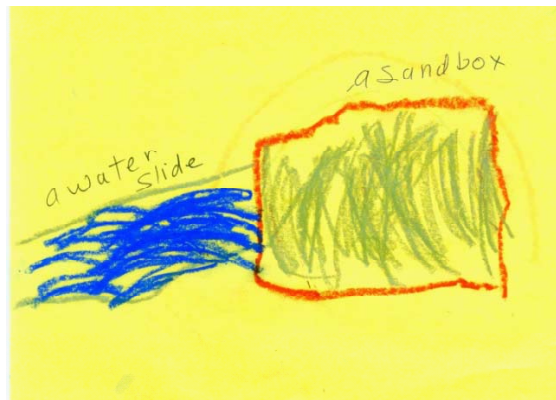


Figure 3.5 Drawing of sand box and water slide



Figure 3.6 Drawing of tire swings



Figure 3.7 Drawing of sand box, slide and tree

Chapter 4

Final Design & Program

Program Element and Concept: A More Natural Way to Learn

My concept concerns the environment in which young children will have a great chance of succeeding. I will implement a nature theme outdoor classroom that educates students about nature, which stimulates children's senses, and enhances their learning experiences in different subjects, such as music, art, and science. Some natural elements in the playground that I will incorporate



Figure 4.1 Eg. of Insect Observation Station

includes a water feature, an art, science and music area, play areas, a sand box, a bigger bike loop with crosswalk, different paving areas, a quiet and picnic area, and a sense garden. Most of the equipment will be made from wood and recycled materials.



Figure 4.2 Eg. of Natural Art Area

The reason to put a water feature is because it can stimulate children's sense of touch, sight, and listening. Children can also enjoy the outdoors and play with water during summer. The water feature is a small bamboo fountain where water flows into bamboo tubes until it reaches to the ¹³

gravel base that collects water repump the water up to the bamboo tube again.

In the art, science, and music area, I will incorporate an insect observing station(Fig. 4.1), different kinds of music instruments with a sloped amphitheatre, and a natural art area where children can use different natural materials such as logs and flowers to create artworks on the ground.(Fig. 4.2)



Figure 4.3 Hiding Mount by Isamu Noguchi

Some natural play equipments Noguchi

included a sculpture slide and a hiding mount, both inspired by Isamu Noguchi.(Fig. 4.3, 4.4) Both these play equipments fit to the nature theme and allows children to further develop their sense of space. Also, a semi-roofed playhouse is incorporated next to the sense garden. The play house is made out of wood with branches and wood pieces that creates a semi open tunnel to stimulate children's visual senses when they look up to the sky. A sand box can stimulate their imagination and creativity by creating different shapes and topologies. A bigger bike loop with crosswalk will be implemented in surrounding the play areas so children could learn to bike safely. Also,



Figure 4.4 Sculpture Slide by Isamu Noguchi



Figure 4.5 Sense Garden: Smell

there are different pavements in different areas so children can learn how to identify materials. As for the quiet and picnic area, there will be child size wooden picnic tables and benches for them to read books or draw pictures.

The sense garden will be the main outdoor classroom where children can learn the plant's life cycle, how to take care of plants, see the process of food production, and observe different kinds of pollinators. The sense garden also stimulates children's five sense, which includes sight, smell, taste, touch, and hearing. Different colors of plants can gives pleasure to children's eye. Planting different fragrance plants can stimulates their sense of smell. (Fig. 4.5) Growing vegetables or fruit trees can stimulates children's sense of taste while learning the process of food production. For instance, the children grew some lettuce and tomato. The teacher can teach them



Figure 4.6 Inside the playhouse

to wash and prepare the vegetables. As for the sense of touch, different texture plants such as thick leaves, smooth flower petals, and rough bark etc. will be planted. By putting in plants that attract pollinators such as birds and butterflies, not only can children listen to birds singing, they can also learn about different pollinators and the process of pollination.



Figure 4.7 Playhouse inspiration

Design Process

Bubble Diagrams and Sketches

Throughout the design process, I came up with two conceptual designs.

For the first concept, I arranged and moved around different element according to the site analysis. I have the sensory garden surrounding the site to serve as a screening. Then, I have all other areas scattered in the playground. I did not like the first design because I felt like the site was not connecting well and did not function as a whole. (Fig 4.8,4.9) So I came up with a second design where I have a bike loop surrounding the music and play area while connecting to all other pieces. Also, the pavement of different areas are different, for instance, the play areas are bark mulches, while the the sand box and water element area are sand pavement. Again, the sensory garden will remain the same to serve as a screening to the site. (Fig. 4.10) To better understand the topology and use it as a play and education tool, I created a clay model just to see how the hiding mount and amphitheater can work well in the playground. (Fig. 4.11)

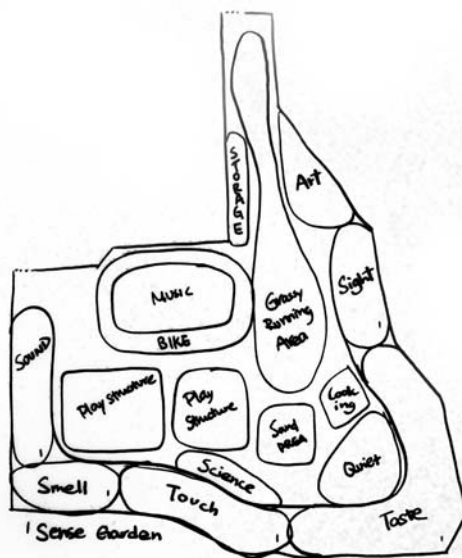


Figure 4.8 Bubble Diagram of first design concept



Figure 4.9 First design concept sketch

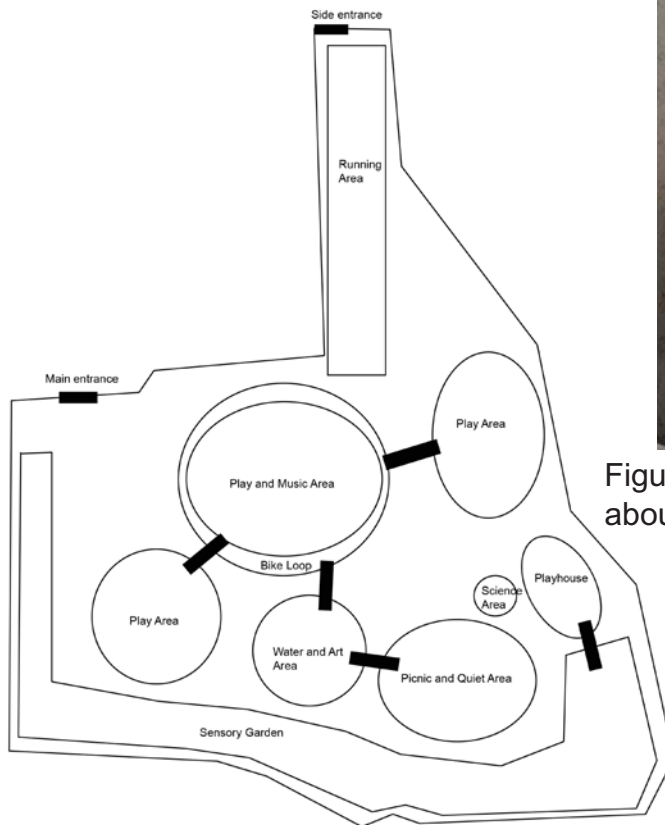


Figure 4.10 Second design concept bubble diagram



Figure 4.11 Clay model study about topology

Master Plan

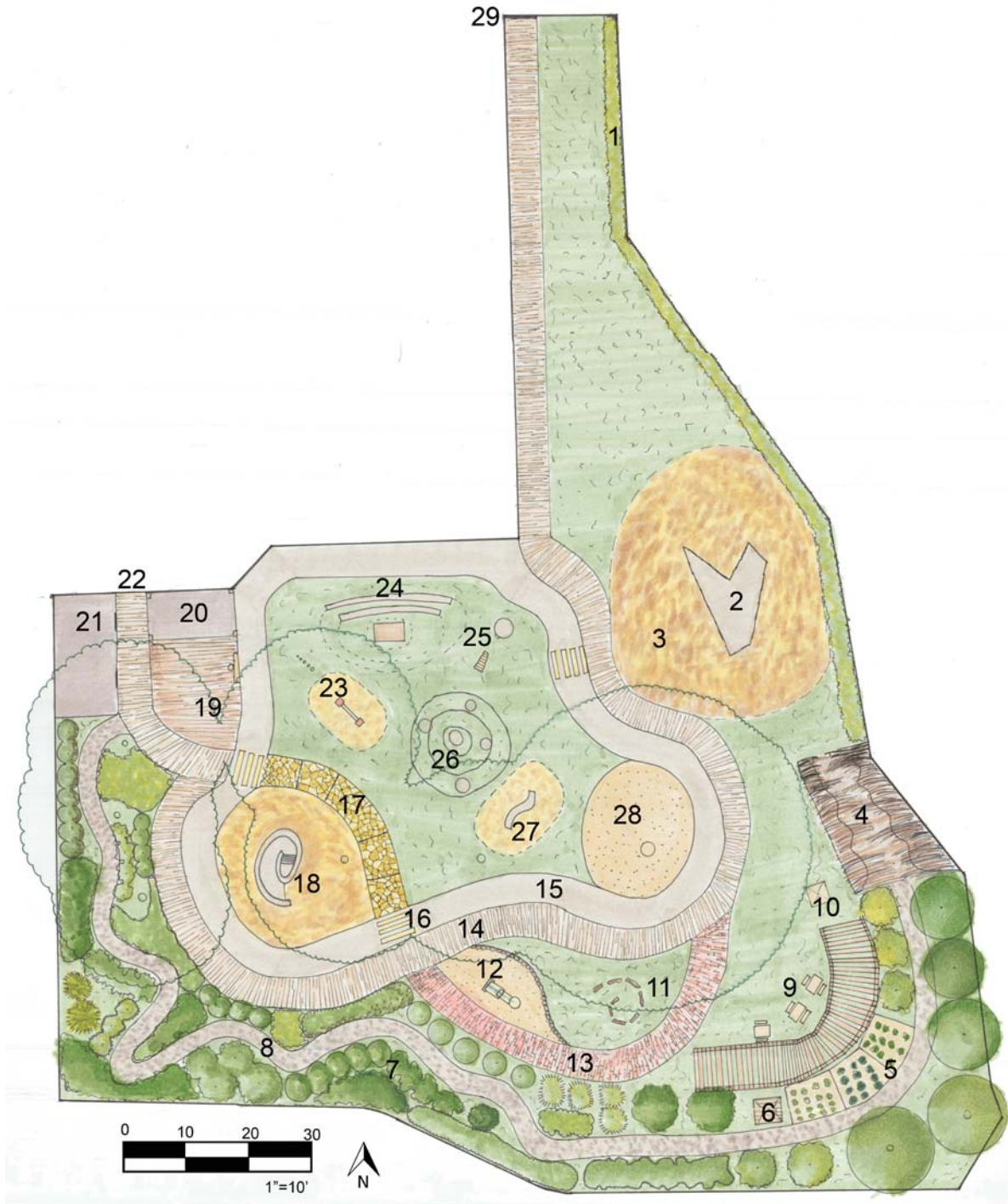


Figure 4.12 Master Plan

Legend

- 1) Plant Screening
- 2) Existing Play Equipment
- 3) Bark Mulches
- 4) Play House
- 5) Sensory Garden (Taste)
- 6) Tool Storage
- 7) Sensory Garden (Smell,Listen,Sight,Touch)
- 8) Asphalt Paving
- 9) Picnic and Quiet Are With Trellis
- 10) Insect Observation Station
- 11) Nature Art Area
- 12) Water Element on Sand Pavement
- 13) Brick Pavement
- 14) Wood Pavement
- 15) Concrete Bikepath
- 16) Crosswalk
- 17) Flagstone Pavement
- 18) Sculpture Slide
- 19) Basketball Loop on Wood Pavement
- 20) Bike Shed
- 21) Storage
- 22) Main Entrance
- 23) Teeter-totter
- 24) Mini Amphitheater
- 25) Music Area
- 26) Hiding Mount
- 27) Balancing Bar
- 28) Sandbox
- 29) Side Entrance

Perspectives



Figure 4.13 Perspective looking from East side



Figure 4.14 Aerial view



Figure 4.15 View looking at the hiding mount and the sloped amphitheater



Figure 4.16 View looking at the sculpture slide, pathways, and bamboo fountain

Chapter 5

The Sensory Garden

Planting Plan



Figure 5.1 Planting Plan

The plants in the planting plan are mostly in sensory garden. In the sensory garden, I implemented fragrance plants, plants that have different textures, different colors of flowering plants, plants that make sounds in the wind, and edible plants. There is a fruit and vegetable area in the garden for the sense of taste. Other than that, the rest of the garden are scattered with other sensory plants. The reason for this design is so that children can go to any part of the garden and still can get stimulated.

Planting List

- | | |
|---------------------------------|-------------------|
| 1) Calycanthus foetidus | Sweet shrub |
| 2) Thymus x citriodorus | Thyme lemon |
| 3) Tulbaghia violacea | Society garlic |
| 4) Stachys byzantina | Lamb's ear |
| 5) Rosmarinas officinalis | Rosemary |
| 6) Tropaeolum polyphyllum | Wreath Nasturtium |
| 7) Myrica cerifera | Bayberry |
| 8) Muhlenbergia rigens | Deer Grass |
| 9) Origanum vulgare | Origanum |
| 10) Cuppressus x leylandii | Leyland cypress |
| 11) Mentha x piperita | Peppermint |
| 12) Trachelospermum jaminoides | Star jasmine |
| 13) Corylus cornuta | Western Hazelnut |
| 14) Trachelospermum jasminoides | Start jasmine |
| 15) Mentha spicata | Spearmint |
| 16) Mentha suaveolens variegata | Pineapple Mint |
| 17) Cuppressus x leylandii | Leyland cypress |
| 18) Stachys byzantina | Lamb's ear |
| 19) Geranium sp. | Geranium |
| 20) Abelia grandiflora | Glossy abelia |



24 Figure 5.2 Society garlic



Figure 5.3 Lamb's ear

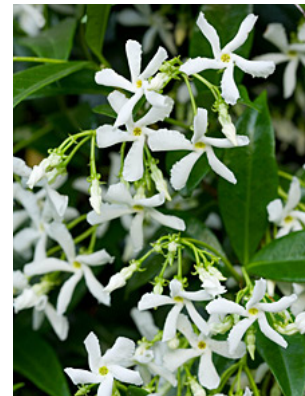


Figure 5.4 Star jasmine

- | | |
|-----------------------------------|-----------------------|
| 21) <i>Rosmarinus officinalis</i> | Rosemary |
| 22) <i>Lavandula angustifolia</i> | English lavender |
| 23) <i>Nassella tenuissima</i> | Mexican feather grass |
| 24) <i>Thuja orientalis</i> | Oriental arborvitae |
| 25) <i>Salvia leucantha</i> | Mexican bush sage |
| 26) <i>Vaccinium macrocarpon</i> | Cranberry |
| 27) <i>Daucus carota</i> | Carrot |
| 28) <i>Brassica oleracea</i> | Cabbage |
| 29) <i>Allium cepa</i> | Onion |
| 30) None | Native Bentgrass |
| 31) <i>Punica granatum</i> | Pomegranate |
| 32) <i>Malus domestica</i> | Apple |
| 33) <i>Sambucus sp.</i> | Elderberry |
| 34) <i>Prunus armeniaca</i> | Apricot |
| 35) <i>Citrus 'Nagami'</i> | Citrus |
| 36) <i>Pittosporum tobira</i> | Japanese pittosporum |



Figure 5.5 English lavender



Figure 5.6 Cabbage



Figure 5.7 Rosemary

Chapter 6

Conclusion &

Bibliography

Conclusion

Today, many schools do have playground for students, yet not every school has a playground that serves as an outdoor classroom and connects the children back to the nature. I believe that the learning process for children as young as pre-school age starts to develop and it is necessary to enable them to play in the outdoor with natural elements like plants, water, and topology etc. This is so they can learn about their spatial surroundings and their own sensory system. By working in this project, I achieved at creating an outdoor classroom that allows children to appreciate and learn about the nature while using nature as a tool to learn about other subjects such as art, music and science.

This project is one of the best experiences I have ever had in my life. I learned a great deal in this project, from contacting people for information on school, to site analysis, to talking to the client, to working with children, and slowly going through the design process of revisions till finalizing the plans. Being able to do a real world project by myself with getting some help from the faculties, I believed I am ready to work in the field of landscape architecture.

Bibliography

California School Garden Network. Web. 11 Feb. 2011. <<http://www.csgn.org/>>.

Center for Disease Control and Prevention. "Using Environmental Design to Prevent School Violence". Department of Health and Human Services. 11. Feb. 2011 <<http://www.cdc.gov/ncipc/dvp/CPTED.htm>>.

"Early Childhood Lab School." UC Davis: CCFS. Web. 29 Apr. 2011. <<http://ccfs.ucdavis.edu/EarlyChildhoodLaboratory.html>>.

Edward W. Schultz, Ph.D. and Charles M. Heuchert, Ph.D. 1983. Child Stress and the School Experience, Human Sciences Press, Inc. New York.

Enloe, Charles. "Trees That Ease Learning" American Forests. Autumn 2002. 11.Feb. 2011 <http://findarticles.com/p/articles/mi_m1016/is_3_108/ai_93370233>.

Frost, Joe L. Play and Playscapes. Albany, NY: Delmar, 1992. Print.
Kathleen Norris Brenzel. 2001. Sunset Western Garden Book, Sunset Publishing Corporation. California.

Lauri Macmillan Johnson and Kim Duffek. 2008. Creating Outdoor Classrooms, University of Texas Press, Austin.

Libby, Brian. "Creating 'Sustainability Natives': Schools Build Green". The George Lucas Educational Foundation. 11. Feb. 2011 <<http://www.edutopia.org/greenschool-buildings>>.

Mary A. Johnstone. 1957. Science In The School Garden, St Martin's Press, New York.

Moore, Robin C., Susan M. Goltsman, and Daniel S. Iacofano. Play for All Guidelines: Planning, Design and Management of Outdoor Play Settings for All Children. Berkeley, Ca.: MIG Communications, 1987. Print.

Osmon, Fred Linn. Patterns for Designing Children's Centers; a Report from Educational Facilities Laboratories. New York: Educational Facilities Laboratories, 1971. Print.

Robertson, Margaret, and Rodney Gerber. Children's Ways of Knowing: Learning through Experience. Melbourne, Vic.: ACER, 2001. Print.

Susan Rademacher Frey & Barbara W. Ellis. 1992. Outdoor Living Spaces, Rodale Press. Pennsylvania.

White, Randy. "Interaction with Nature during the Middle Years: It's Importance in Children's Development & Nature's Future". White Hutchinson: Leisure & Learning Group. 11. Feb. 2011 <<http://www.whitehutchinson.com/children/articles/nature.shtml>>.