

# SHAPING SPACES WHERE CHILDREN BLOOM

An architectural approach for the design of elementary schools to flourish the healthy development of children

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"Children are like tiny flowers; they are varied and need care, but each is beautiful alone...





... and glorious when seen in the community of peers." - Friedrich Froebel



# **BIOECOLOGICAL SYSTEM THEORY**

Environmental systems that influence development





## MICROSYSTEM

Direct environmental interactions of the child









SHAPING SPACES WHERE CHILDREN BLOOM



## SCHOOL

## NEIGHBOURHOOD

## **EDUCATIONAL TRANSITION**

Then



SHAPING SPACES WHERE CHILDREN BLOOM

## **EDUCATIONAL TRANSITION**

## Now



## **EDUCATIONAL SYSTEMS**

The Netherlands



## WHERE DO I STAND?

Role of architecture within the school environment



SCHOOL ENVIRONMENT

SHAPING SPACES WHERE CHILDREN BLOOM



## CONTENTS



## **THE CHILD**

Research

SHAPING SPACES WHERE CHILDREN BLOOM



## THE SYSTEM

Concepts



## **THE FLOWER**

Design

## CONTENTS



## **THE CHILD**

Research

SHAPING SPACES WHERE CHILDREN BLOOM



## THE SYSTEM

Concepts



## **THE FLOWER**

Design

How should school environments influence the development of children between the ages of 4 to 8 years old?

Interior and exterior of an elementary school building



between the ages 0-8 years old. From the age of 4, children attent school



**THE CHILD** 

Research









Literature

Participatory

Observatory

SHAPING SPACES WHERE CHILDREN BLOOM



## THE SYSTEM

Concepts



## THE FLOWER

Design



**THE CHILD** 



Research









Literature

SHAPING SPACES WHERE CHILDREN BLOOM



## THE SYSTEM

Concepts



## THE FLOWER

Design

# CHILD DEVELOPMENT

Holistic development





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Express their imagination and original ideas through art projects, storytelling, and play.

#### Language domain

Develop their language skills by engaging in conversations, listening to stories, and learning new vocabulary.

Learn to manage emotions, build relationships, and empathize with others, enhancing their social interactions and self-awareness.

#### SHAPING SPACES WHERE CHILDREN BLOOM







#### Social-emotional domain

#### Physical domain

Enhance gross motor skills (large movements), fine motor skills (small movements) and overall physical health

#### Cognitive domain

Improve their problem-solving abilities and understanding of the world by exploring, asking questions, and engaging in educational games.

## LITERATURE RESEARCH

Cognitive development





#### Sensimotor stage

# 0 - 2

Infants learn about the world through sensory experiences and manipulating objects.

2 - 7

Preoperational stage

Young children begin using symbols and language, but their thinking is still intuitive and egocentric.





#### Concrete operational stage

7 - 11

Children start thinking logically about concrete events and understand the concept of conservation.

# Formal operational stage

11 - ADULT

Adolescents develop the ability to think abstractly, reason logically, and plan systematically. → Age

# CHILD DEVELOPMENT

Cognitive development





#### Concrete operational stage

7 - 11

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#### Formal operational stage

11 - ADULT

Adolescents develop the ability to think abstractly, reason logically, and plan systematically.

Age

## PLACE AND SPACE

Architecture and the development

SHAPING SPACES WHERE CHILDREN BLOOM

# SPACE

## PLACE AND SPACE

Architecture and the development

SHAPING SPACES WHERE CHILDREN BLOOM



## PLACE AND SPACE

Architecture and the development

PLACE ATTACHMENT



SENSE OF PLACE

SENSE OF BELONGING

SHAPING SPACES WHERE CHILDREN BLOOM

DEVELOPMENT





**THE CHILD** 

Research







iterature

Participatory

Observatory

SHAPING SPACES WHERE CHILDREN BLOOM





## THE SYSTEM

Concepts

## **THE FLOWER**

Design

## **CASE STUDIES**





PARKSCHOOL

**VRIJE SCHOOL WIDAR** 

SHAPING SPACES WHERE CHILDREN BLOOM



## DE BERGSE ZONNEBLOEM



#### **MONTESSORI SCHOOL**

## **CASE STUDIES**



## PARKSCHOOL

¶ Delft

Freinet school

160 Children

Grade 3/4



## **VRIJE SCHOOL WIDAR**

Delft
Vrije school
200 Children
Class 2 (grade 4)

#### SHAPING SPACES WHERE CHILDREN BLOOM



## DE BERGSE ZONNEBLOEM

- 🕈 Rotterdam
- Dalton school
- 400 Children
- Grade 4



## **MONTESSORI SCHOOL**

♥ Delft
Montessori school
200 children
Grade yellow (grade 3,4,5)

## PARTICIPATORY RESEARCH

Tours and photographs



SHAPING SPACES WHERE CHILDREN BLOOM

## PARTICIPATORY RESEARCH

## Drawings







































kikker kostschool

















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a share



## **OBSERVATORY RESEARCH**



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	PARKSCHOOL	VRIJE SCHOOL WIDAR	DE BERGSE ZONNEBLOEM	MONTESSORI SCHOOL
Total area	2.562 m <sup>2</sup> (including other functions)	Unknown	1.875 m <sup>2</sup>	Unknown
Classroom area	45 m <sup>2</sup>	48 m²	40 m²	50 m <sup>2</sup>
Playground area	2500 m <sup>2</sup>	900 m²	1000 m²	1200 m <sup>2</sup>
Public playground	Yes	No	No	Yes
Usage outside classroom	Communal areas	Desks in hallway	Desks in hallway	Communal area
Extra functions	Sports association and school	No	No	After school care
Opening hours	8:00 - 21:00	8:00 - 16:00	8:00 - 16:00	8:00 - 19:00
Laboratories	No	Theatre	No	Arts and crafts, theatre
Social gathering space	Yes	No	No	Yes
Mixed age classrooms	Yes	No	No	Yes
Mixed age play time	Yes	No	No	No
Class table formation	Groups of four	Two desks side by side facing the teacher	Groups of four and two	Groups of four to six







## PATTERN LANGUAGE

Patterns





# up here

Children are able to be dropped and picked up by their parents in a safe manner.

35



WIde stairs allow easy accessibility and interaction.



Stairs must have railings on child and adult height.



Children need acces to nature during recess.



Wide hallways have

multiple functions.

Children understand

boundaries.

Children need

exposition spaces for

their work.

A school should have a

library.

you Children love flowers.

Covered playing areas

enable children to play

outside regardless of

the weather.

## PATTERN LANGUAGE

Patterns through scale





#### **URBAN SCALE**

- 01. Keep distance
- 15. Kiss and bye
- 20. Open at all times
- 21. The heart

## **EXTERIOR SCALE**

- 04. Fresh air
- 05. Sharing is caring
- 06. Match flooring to play
- 07. Drop and pick me up here
- 12. A place for noise
- 14. Arrival
- 16. Back to the roots
- 17. I'll pick a flower for you
- 18. Made of sugar
- 19. Shelter in the shade
- 27. Draw the line
- 33. Take the leap



**BUILDING SCALE** 

- 24. Room for extra
- 25. Read a book
- 26. Wide hallway
- 29. Mixed-age community
- 31. Spaces for all
- 32. Take a deep breath







## 13. Clean your hands

CLASSROOM SCALE

- 23. No coats in the classroom
  - 28. Undercrowding

- 02. A touch of green
- 09. Hold on
- 10. I see you
- 11. Reaching stuff
- 22. "One size fits all"
- 34. Look what I made



- 03. Eyes on the greenery
- 30. Playing is teaching
### INDIVIDUALITY

All children are unique



### **TYPES OF LEARNING**

Subtitle

### **VISUAL** LEARNER

Learns through seeing. Children who are visual processors tend to **observe** a parent's or teacher's body language and facial expressions for content and learn through demonstrations and descriptions. They tend to have well-developed imaginations and often think in pictures. **Too** much movement or action in a classroom may cause distraction for them. For older children who read, written instructions may help clarify verbal directions.

### **AUDITORY** LEARNER

Learns through listening. Children who are auditory processors learn through participating in discussions and talking things through. Verbal directions may help clarify instructions or written information. **Too much noise may** be distracting and children with this strength may learn best in a quiet environment.

### **TACTILE** LEARNER

Learns through touch. Children who are more tactile prefer activities or projects that allow them to **use** their hands. Your child may prefer doodling or drawing to aid memory.

### **KINESTHETIC** LEARNER

Learns through moving and doing. Children who are more kinesthetic learn through physical sensations and may have trouble sitting still for long periods. A hands-on approach that allows your child to actively explore her physical world helps her learn best.

### **CONFINED SPACES**

SHould the classroom have four walls?



The traditional classroom



Children's perception of the room



Hertzberger's conventional notion on segregating from the traditional four wall classroom



What if classroom learning is not limited to four walls

### **PEDAGOGY TYPOLOGIES**

Diverse learning compositions



### Presentation 25 - 150 students

Students or teachers present to a largely passive group. Group size may vary from one class cohort to a full form or year. Such activities facilitate efficient communication of information.





### Large interactive

25 - 75 students

Activities that move seamlessly from large to small group and back; often organized in subgroups of 4-6 that can be subdivided again into 2s or 3s. Facilitates peer-to-peer learning and team teaching.

This is the 'breakout' model of problem-based and peer-to-peer learning with small autonomous groups that may disperse and take responsibility for their learning.

### SHAPING SPACES WHERE CHILDREN BLOOM



### Medium interactive

10 - 25 students

Activities with a similar flow of movement of the large interactive, but with a smaller group size and generally one teacher.



### Creative interactive

10 - 25 students

Interactive activities but with an emphasis on hands-on learning in addition to pens and keyboards, plus access to a range of resources that may include art materials, wet areas, laboratory or outdoors.



### Small interactive

2 - 5 students



### Reflection 1 student

Singular activities that include reading, writing or hands-on research to meet learning objectives.

### LEARNING LANDSCAPES

Compositions



### Mountain top

Direction of attention

Supports single way communication Presentation or stage performance



Hands-on

Creation expert

Using prototyping to gain deeper understanding of theory to practice

### LEARNING LANDSCAPES

Architectural elements



Concentration

Provides a place for physical or visual privacy

Creation of smaller pockets for group work Creates a feeling of coherence and collaboration



Waterhole Invitation

Supports informal knowledge Sharing through free flow and spontaneous meetings Movement moves knowledge from the brain to the body



### Mountain top Direction of attention

Supports single way communication Presentation or stage performance



Movement Physical activation

Hands-on Creation expert

Using prototyping to gain deeper understanding of theory to practice



Campfire Marked territory

"There are no children that don't want to learn. There are children that don't want to learn from you."

- Rob Houden, Agora Education



## THE CHILD

Research

SHAPING SPACES WHERE CHILDREN BLOOM



### **THE SYSTEM**

Concepts



### **THE FLOWER**

Design

### **THREE ZONES**



CONCENTRATE

SHAPING SPACES WHERE CHILDREN BLOOM

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### RECHARGE

ACTIVATE

## THREE ZONES

Continious movement within the zones



## THRESHOLDS

Creation of spaces without confined walls



## **THREE ZONES**

Height creates zones



Direct exterior connection

Subtle exterior connection

SHAPING SPACES WHERE CHILDREN BLOOM

No exterior connection

SHAPING SPACES WHERE CHILDREN BLOOM

## INDIVIDUALITY

PLAY

INDEPENDENCE

## TITLE Subtitle



## THE CHILD

Research

SHAPING SPACES WHERE CHILDREN BLOOM



### THE SYSTEM

Concepts



### **THE FLOWER**

Design



SHAPING SPACES WHERE CHILDREN BLOOM

## BASISSCHOOL DE BLOEM

Development of 4 - 12 year olds in The Netherlands



Development of 4 - 12 year olds in The Netherlands





**SITE** *Current situation* 

# Overschot aan kinderen in Rijswijk Buiten: nieuwe school creëert wat ruimte

In de nieuwbouwwijk Rijswijk Buiten is een op de drie inwoners een kind, maar de basisscholen zitten propvol. Een kleine verlichting: sinds dit jaar zit er een nieuwe basisschool, welke nog ruimte genoeg heeft. "Ouders hebben ons nog niet ontdekt." SHAPING SPACES WHERE CHILDREN BLOOM

Algemeen dagblad, 2022

Current situation



## **SITE** Child focussed neighbourhood







Building site



Current situation



Current situation



## **SITE** Design











## **DESIGN** Modules





## LEARNING LANDSCAPES

Architectural elements



Cave Concentration

Provides a place for physical or visual privacy



Creation of smaller pockets for group work Creates a feeling of coherence and collaboration



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Supports informal knowledge Sharing through free flow and spontaneous meetings



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Mountain top Direction of attention

Supports single way communication Presentation or stage performance



Movement Physical activation

Movement moves knowledge from the brain to the body



Hands-on Creation expert

Using prototyping to gain deeper understanding of theory to practice

## **DESIGN** Playground







## DESIGN Playground



SHAPING SPACES WHERE CHILDREN BLOOM

OUTDOOR LEARNING ENVIRONMENT SHOULD BE AN EXTENSION OF THE INDOOR ENVIRONMENT AND VICE VERSA

## DESIGN Playground





SHAPING SPACES WHERE CHILDREN BLOOM

Motor movement play



### SHAPING SPACES WHERE CHILDREN BLOOM

**ACTIVATION ZONE** 

## STRUCTURE

Concept



## STRUCTURE

Concept



Moments of stay

SHAPING SPACES WHERE CHILDREN BLOOM



Moments of movement




Modules



Additional spaces



Overhangs, creating a space outside



Trees as landmark within building



Tree column





Tree column - hidden connections



Tree column - hidden connections





Column base

SHAPING SPACES WHERE CHILDREN BLOOM



Ring connection

Outer ring connection

**CONNECTION TO PLAYDECK** 



# **CONNECTION TO PLAYDECK**





Trees

Stairs

SHAPING SPACES WHERE CHILDREN BLOOM





Slides

Column

# **PLAYDECK** Floorplan







Park 'n Play JAJA Architects

## SHAPING SPACES WHERE CHILDREN BLOOM



YueCheng Courtyard Kindergarten MAD Architects

# PLAYDECK

Details







COMMUNAL AREA ELEVATION DETAIL SCALE 1:20



# **TITLE** Subtitle



# **CLIMATE DESIGN**

Ventilation floor



- 1. Ventilatie noppenplaat 2. Bevestigingsnet (onderwapening) 3. Vloerverwarmingsleiding

- 4. Afwerkvloer 5. Vloerafwerking (linoleum) 6. Ventilatie rooster

# MODULE

Details







MODULE ELEVATION DETAIL SCALE 1:20



SHAPING SPACES WHERE CHILDREN BLOOM



## **CONCENTRATION ZONE**

**RECHARGE ZONE** 



# THANK YOU





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