



Spatial Awareness

Developed by Shalini Kathuria
Plainfield Public School District

Objectives

- A brief review of “ Space.”
- A brief review of Key Developmental Indicators related to Space .
- A brief review of “Supporting Children’s understanding of Space”.
- Suggestions for teachers.

Agenda

- Opening activity
- What is space?
- What are the KDIs related to space?
- How to support children's understanding of space ?
- Suggestions for teachers/adults
- Application activity
- Implementation
- Questions

Handouts

- *NJ DOE Math Standard 4.4 Children develop Spatial and Geometric Sense*
- *Educating Young Children Chapter 16, Space Teaching Strategies*
- *Building Foundations for Spatial Literacy in Early Childhood by Susan L. Golbeck YC Young Children; Nov 2005*
- *Stages of Block Building, The Block Book, 3rd Edition, NAEYC*
- *Learning Paths and Teaching Strategies for Early Mathematics-NAEYC Position Statement*
- *High / Scope Extensions Article: Spatial Learning: Beyond Circles, Squares, and Triangles*
- *Book list, vocabulary list for position and direction*

What is Spatial Awareness?

- Spatial awareness can be defined as "an awareness of the body in space, and the child's relationship to the objects in the space."



- From Title *Educating Young Children, Chapter 16, Space* (p.428) by Author(s) Mary Hohmann, David P. Weikart, and Ann S. Epstein- 3rd Edition, Ypsilanti, MI: High Scope Press, High Scope Educational Research Foundation. Used with permission.

What is Spatial Awareness?

- How does it develop?



Space

Spatial awareness involves the following two components:

- Spatial Orientation
- Spatial Visualization



Spatial Orientation



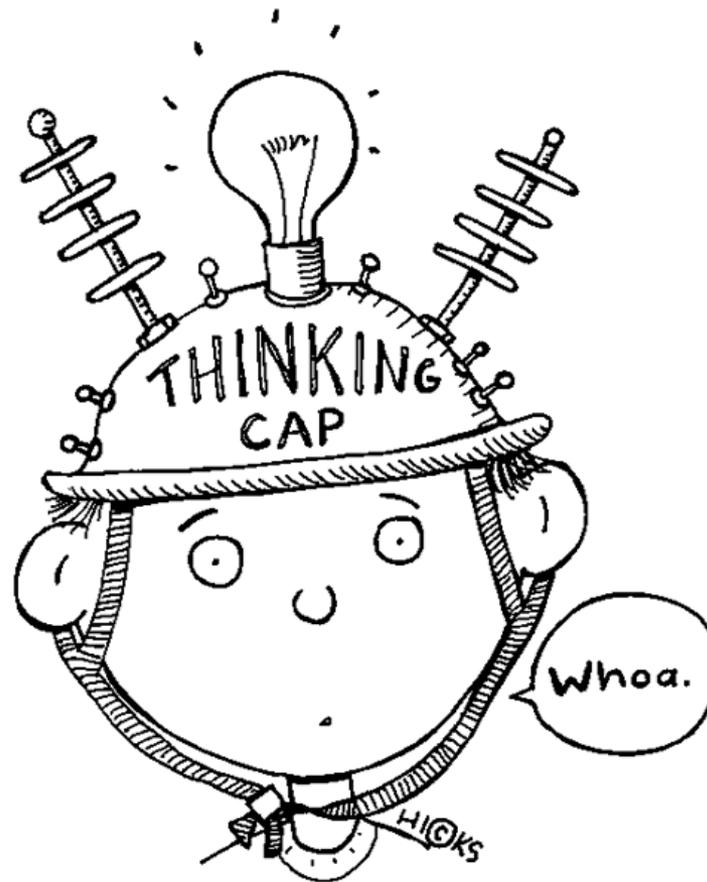
- The first, *Spatial Orientation*, is knowing where you are and how to get around.

Spatial Visualization



- The second component, *Spatial Visualization* is the ability to generate and manipulate images in your mind.

Opening Activity



Opening Activity



- We are going to look at a few pictures and/or anecdotes, one at a time.
 - After looking at the picture or the anecdote, check off the Key Developmental indicator you think it relates to.
 - Then think about if the activity relates to spatial orientation and/or spatial visualization.
-
- Refer to the template

Example/Prototype

- *Amanda and Isaac put together a 20 piece puzzle with occasional help from Betsy, their teacher. Then they take all the pieces out and put them together again all by themselves.*

KDI: Fitting things together and taking them apart

Spatial Visualization

From Title *Educating Young Children, Chapter 16, Space* (p.425) by Author(s) Mary Hohmann, David P. Weikart, and Ann S. Epstein- 3rd Edition, Ypsilanti, MI: High Scope Press, High Scope Educational Research Foundation. Used with permission.



- *At the house-area sink, Brian fills a mixing bowl with small plastic bears, empties the bears into the sink, and puts them back into the bowl.*

*KDI: Filling and emptying
Spatial Visualization*

From Title *Educating Young Children, Chapter 16, Space* (p.423) by Author(s) Mary Hohmann, David P. Weikart, and Ann S. Epstein- 3rd Edition, Ypsilanti, MI: High Scope Press, High Scope Educational Research Foundation. Used with permission.



- *Jacob sings, “Roll, roll, roll your boat,” as he rolls the play dough into long strands and then uses scissors to snip the strands into short pieces.*

*KDI: Changing the shape and arrangement of objects
(wrapping, twisting, stretching, stacking, enclosing)*

Spatial Visualization

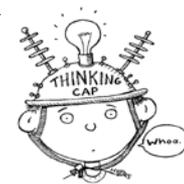
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*KDI: Fitting things together and taking them apart
Spatial Orientation and Spatial Visualization*



KDI: Observing people, places, and things from different spatial viewpoints
Spatial Orientation



“I made a cake with blueberries on top and strawberries on the bottom,” says Colin at small group time, pointing to a stack of poker chips.

(Position)

KDI: Experiencing and describing positions, directions and distances in the play space, building, and neighborhood

Spatial Orientation and Spatial Visualization

From Title *Educating Young Children*, Chapter 16, *Space* (p.432) by Author(s) Mary Hohmann, David P. Weikart, and Ann S. Epstein- 3rd Edition, Ypsilanti, MI: High Scope Press, High Scope Educational Research Foundation. Used with permission.

Jennifer



Jennifer Lopez



KDI: Interpreting spatial relations in drawings, pictures, and photographs
Spatial Visualization

Hands-on

- Make your tower as tall as it can be.
- Build an enclosure.
- Replicate the structure.
- Complete the puzzle.

Space

- *Spatial intelligence arises from the child's action upon the world.*

- Howard Gardner, 1983



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Spatial Orientation



- The first, *Spatial Orientation*, is knowing where you are and how to get around.

Spatial Visualization



- The second component, *Spatial Visualization* is the ability to generate and manipulate images in your mind.

KDIs in Space

- Filling and emptying
 - Fitting things together and taking them apart
 - Changing the shape and arrangement of objects (wrapping, twisting, stretching, stacking, enclosing)
 - Observing people, places, and things from different *spatial* viewpoints
 - Experiencing and describing positions, directions, and distances in the play space, building, and neighborhood
 - Interpreting spatial relations in drawings, pictures, and photographs
- Refer to the Handout (*Space Strategies: A Summary*)

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Spatial Concepts

Through such actions and reflections children construct a basic understanding of spatial relationships.

According to Jean Piaget (1956) the key spatial relationships preschoolers are becoming aware of are “correspondences” involving concepts like

- Proximity
- Separation
- Order
- Enclosure

Example/Prototype

- *Amanda and Isaac put together a 20 piece puzzle with occasional help from Betsy, their teacher. Then they take all the pieces out and put them together again all by themselves.*

KDI: Fitting things together and taking them apart

Spatial Visualization

Separation, Proximity



- *At the house-area sink, Brian fills a mixing bowl with small plastic bears, empties the bears into the sink, and puts them back into the bowl.*

KDI: Filling and emptying

Spatial Visualization

Proximity, Separation



- *Jacob sings, “Roll, roll, roll your boat,” as he rolls the play dough into long strands and then uses scissors to snip the strands into short pieces.*

*KDI: Changing the shape and arrangement of objects
(wrapping, twisting, stretching, stacking, enclosing)*

Spatial Visualization

Separation



*KDI: Fitting things together and taking them apart
Spatial Orientation and Spatial Visualization
Enclosure, Order, Separation and Proximity*



*KDI: Observing people, places, and things from different spatial
viewpoints
Spatial Orientation
Order*



“I made a cake with blueberries on top and strawberries on the bottom,” says Colin at small group time, pointing to a stack of poker chips.

(Position)

KDI: Experiencing and describing positions, directions and distances in the play space, building, and neighborhood

Spatial Orientation and Spatial Visualization

Proximity, Separation, Order

Jennifer



Jennifer Lopez



KDI: Interpreting spatial relations in drawings, pictures, and photographs

Spatial Visualization

Enclosure



Spatial Experiences

- Puzzles
- Movement in space
- Writing
- Composing and decomposing pictures
- Block play

Space

Puzzles



- Mental visualization
- Part-whole relationships
- Positional words and geometry concepts

(As Suggested by Tools of the Mind Curriculum)

Movement in Space



Spatial Literacy



A child's handwriting on unlined paper. The letters 'L', 'V', 'A', 'R', 'S', 'O', and 'Y' are written in a pre-axial style, meaning they are not aligned to a common horizontal line. The letters are scattered across the page, with 'L' and 'V' at the top, 'A' and 'R' below them, and 'S', 'O', and 'Y' further down and to the right.

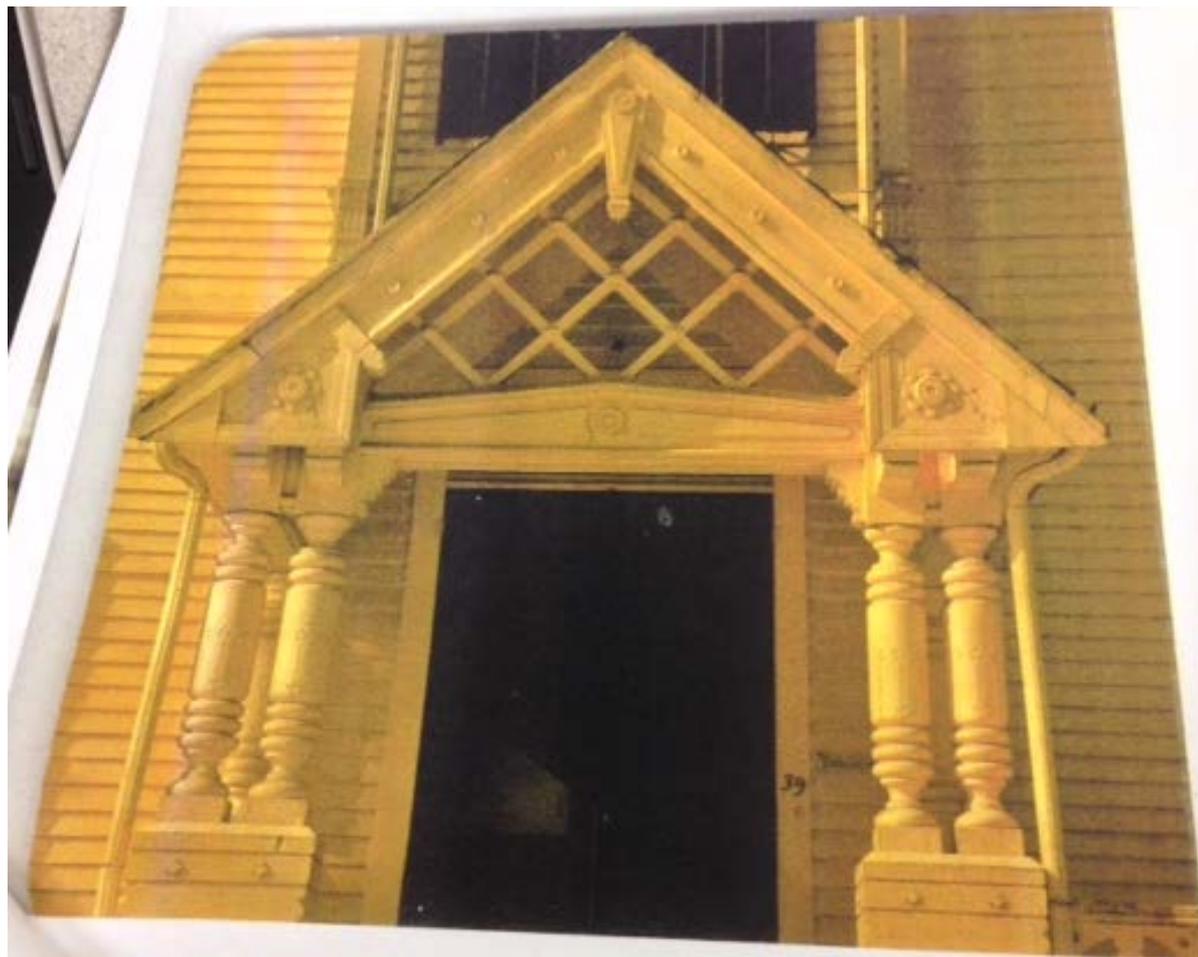
Writing at the pre-axial level.
A child's writing on unlined paper illustrates
the child's difficulty in aligning letters.
(Although the letters are not aligned, it is
possible to "read" what the child wrote.)



A child's handwriting on unlined paper. The letters 'G', 'A', 'R', 'S', 'O', 'Y', and 'S' are written in a uni-axial style, meaning they are arranged along a common horizontal line but are not aligned with the page. The letters are written in a cursive-like style and are arranged in a slightly curved line across the page.

Transition to uni-axial. Letters are arranged
along a line but not aligned with the page.

Composing and Decomposing Pictures



Learning Trajectory

