Playful learning for children in Indian context

Project II

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23 November 2009

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Why children?

- Inquisitiveness to observe children behavior
- Children-centric projects in last semesters
- ‘Creativity’ sessions at Kendriya Vidyalaya, Powai

Opportunity to respond to learning for children

The process

STAGE 1
JULY - SEP'09

RESEARCH BASE
Readings on:
- Learning theories for children
- Play & Learn

Case Studies:
- Visit IIT Campus School &
- Community Centre (facilitated by Navnirmiti)
- Interact with teachers
- Observe children

STAGE 2
SEP'09

NEED IDENTIFICATION & AGE-GROUP SELECTION
- Whom to facilitate?
- What to facilitate?
- How to facilitate?

FORMULATING DESIGN GOALS

IDEATION

STAGE 3
OCT'09

CONCEPT DEVELOPMENT

CONCEPT FEEDBACK

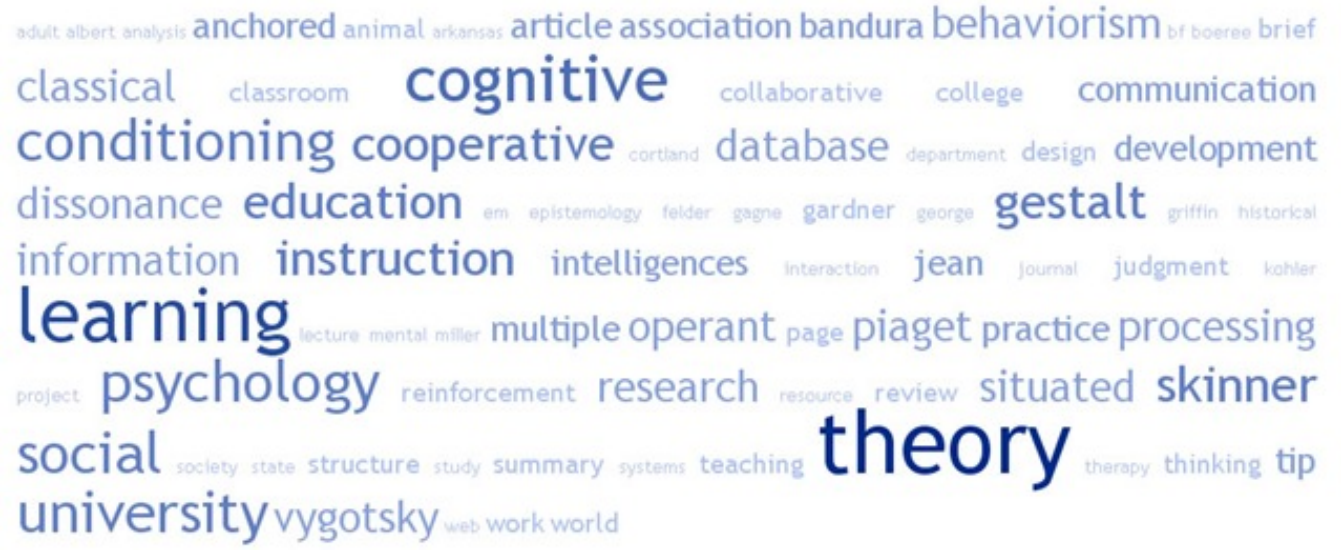
FINAL STAGE
OCT - NOV'09

FINAL CONCEPT & DETAILING

CONCLUSION

Learning

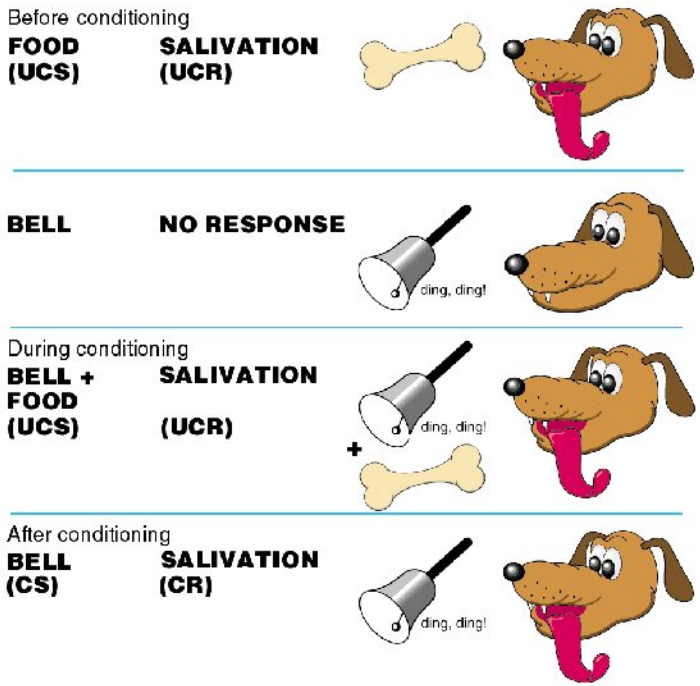
- Assumptions to help somebody learn
- Understand beliefs and rationale behind theories
- Theories as guide and inspiration



Behaviorism

- Response to environment

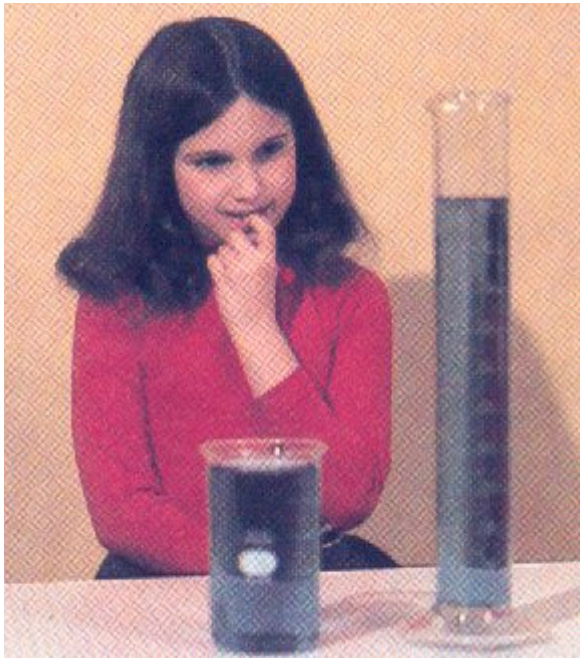
- Educator sets goals and shapes behavior



Cognitivism

- Learners cant be forced

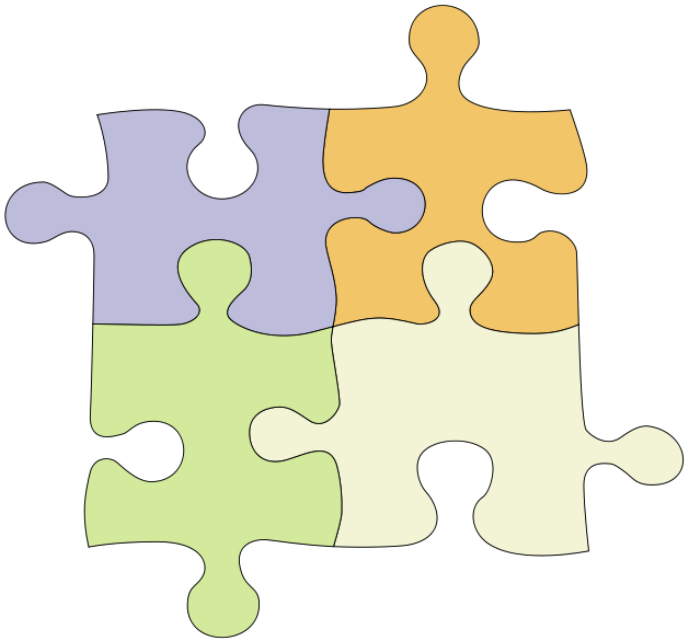
- People have desire to know what is going on



Constructivism

- Construct new ideas

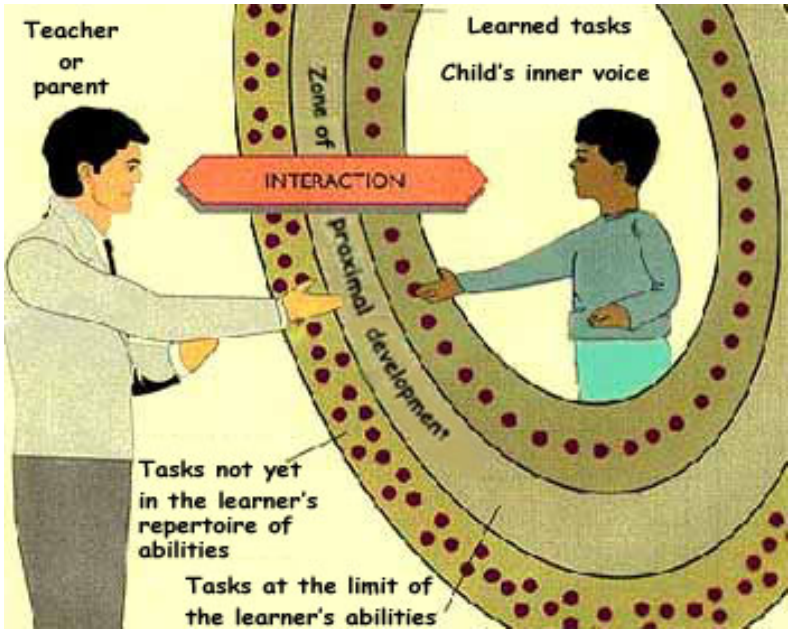
- Learn by experimentation



Vygotsky's Zone of Proximal Development (ZPD)

- Distance between actual development level and potential development level

- Collaborate with capable peers



The Montessori method of learning

Learning is best when:

- it is active and experiential
- not passive and abstract

Education in India

- Both rural and urban population sends its population to Government run schools as they are free

- High drop out rate because of unattractiveness, economic conditions, teaching process

Infrastructure can help in improving interest level

Learning environments
IIT Campus School, Powai

Children:
- are keen to explore new materials (apart from their textbooks)

- are always keen for a change in learning environment

- like to show off their achievements

- 90% wait for PT class throughout the week

- 45% have Maths and 37% have Science as favorite subject

- boys enjoy computer games while girls prefer board games and puzzles

Learning environments
IIT Campus School, Powai

- Teachers incorporate examples from daily life to explain

- Teachers build enthusiasm and understanding with diagrams and demonstrations

- Projects and visits conducted through holidays only

- Experiments make children ask more questions as compared after teaching sessions

- Evaluation is stressful for children, parents as well as teachers

Learning environments

Community Centre, Powai (using Navnirmiti kits)

- Objects interaction makes understanding easy

- Children enjoy the act of creating by themselves

- 9-11 years age were finding difficult to learn with only textbooks and worksheets

- Each child used kit differently

- Teacher participated as a learner

Learning environments

Community Centre, Powai
(using Navnirmiti kits)

- One kit shared between children, they prompted each other

- Playful element of ball introduced to understand counting

- Children were eager to learn through their kits without the teacher

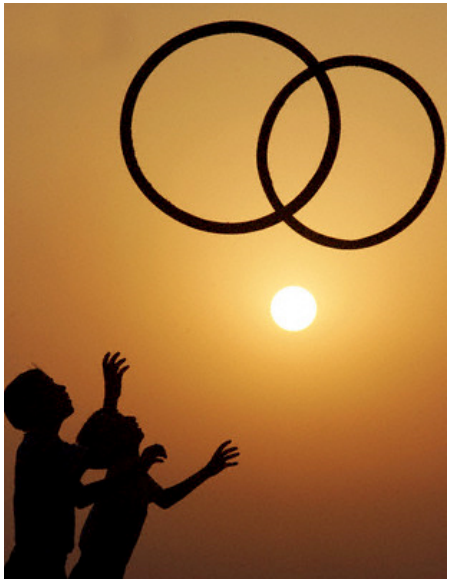
-Children don’t need the kit and teacher once they understand

Play

- voluntary motivated activity
- pleasurable and enjoyable
- involves active engagement
- is generally engrossing

Play & learn

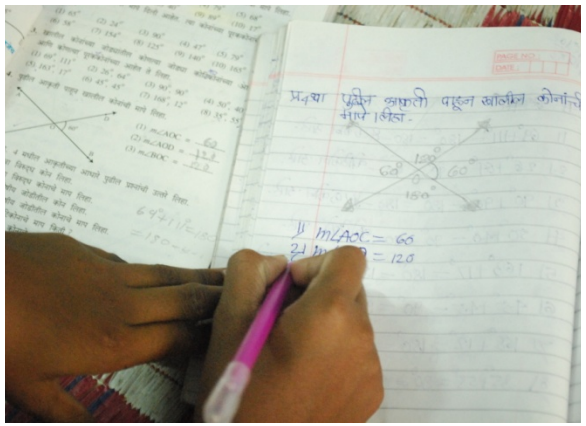
- exploration
- engagement
- reflection
- creation
- collaboration



Whom to facilitate?

- level of abstraction and complexity increases
- expected to develop understanding with least number of activities
- majorly dependent on textbooks

Children of 11-14years



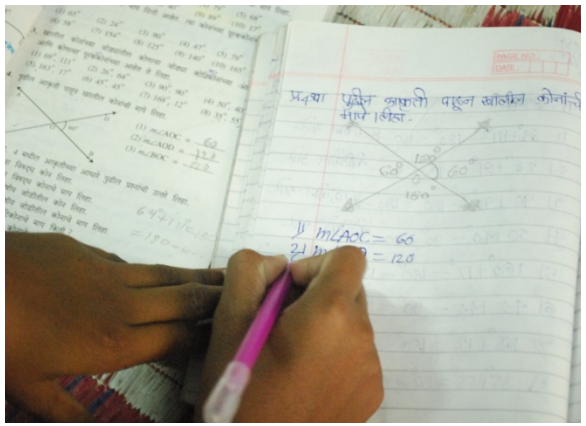
Characteristics of age group

- want to active and motivated to learn something new
- develop new interests and hobbies
- prefer working in teams and being with peer groups

What to facilitate?

- curious and exploring the world around
- expected to develop understanding with least number of activities
- majorly dependent on textbooks

Science as a subject



What to facilitate?

- curious and exploring the world around
- exploring materials, asking questions, investigating, recording, reflecting on what they have done and what it means
- direct experience with materials, events and ideas that are important to later learning

Science as a subject

What in Science?

Food
Air
Water
Electricity
Magnetism
Light
Plants
Body
Heat
Acids, Bases & Salts
Force
Climate
Respiration
Reproduction
Winds, storms and cyclones
Materials
Combustion
Sound
Stars
Pollution

What in Light?

Sources of light

Transparent, translucent & opaque objects

Shadows

Umbra & Penumbra

Pinhole camera

Mirrors & reflections

Kaliedoscope

Light travels in a straight line

Reflection of light

Periscope

Mirror image

Spherical mirrors

Image formed by lenses

Sunlight- white or colored

What makes things visible?

Laws of reflection

Regular and diffused reflection

Multiple images

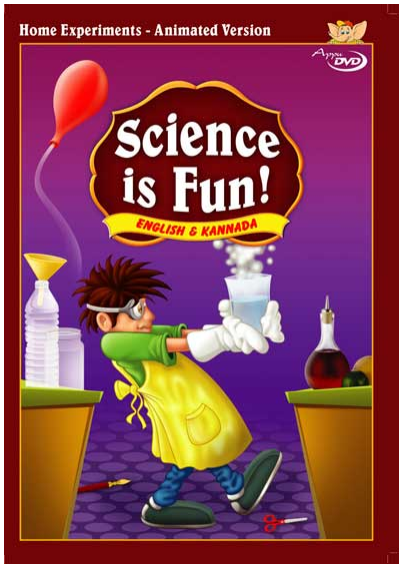
Eyes

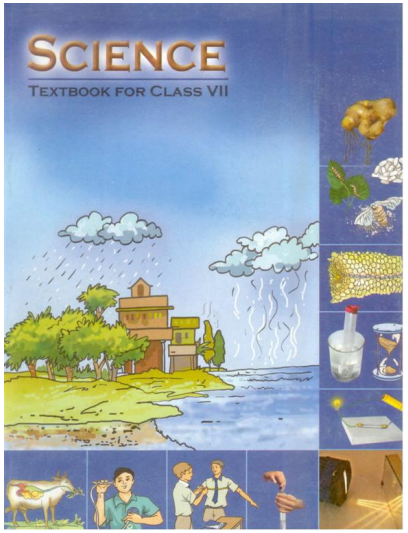
How to facilitate?

- should be appropriate, interesting and relevant

- one of the widest used methods is learning through discovery

- traditional textbook only and work sheet teaching of science is not recommended with inquiry and hands on experiences





How to facilitate?

Illustrations

Experiments

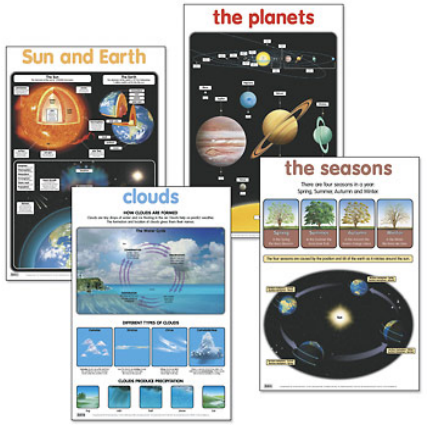
Installations

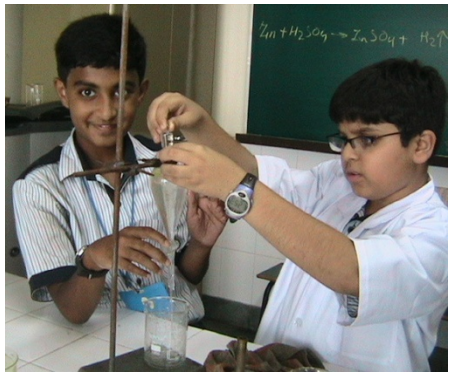
Multimedia

Science Museums

Do-it yourself activities

Learning kits





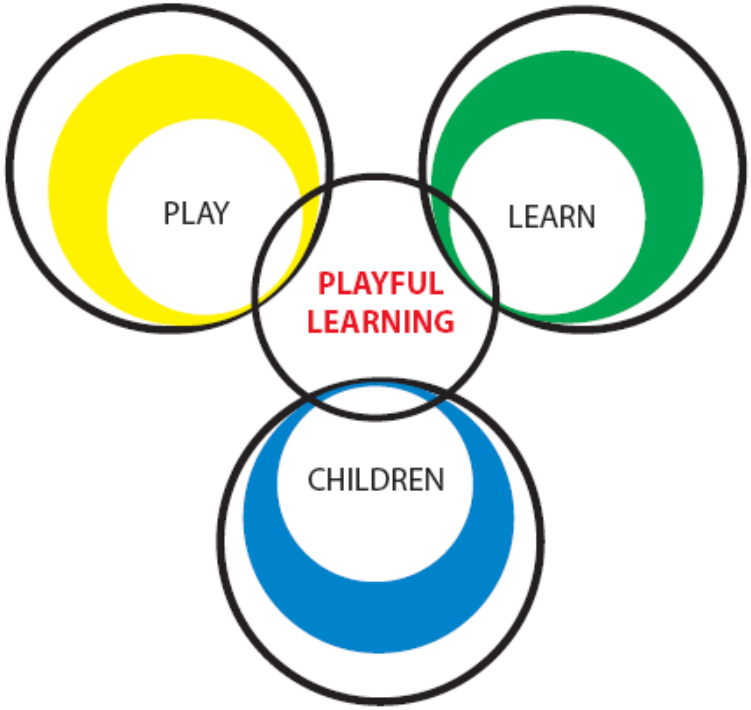
Design Intent

Cater to two needs of learning i.e. ‘create’ and ‘understand’

-To make children learn as they play

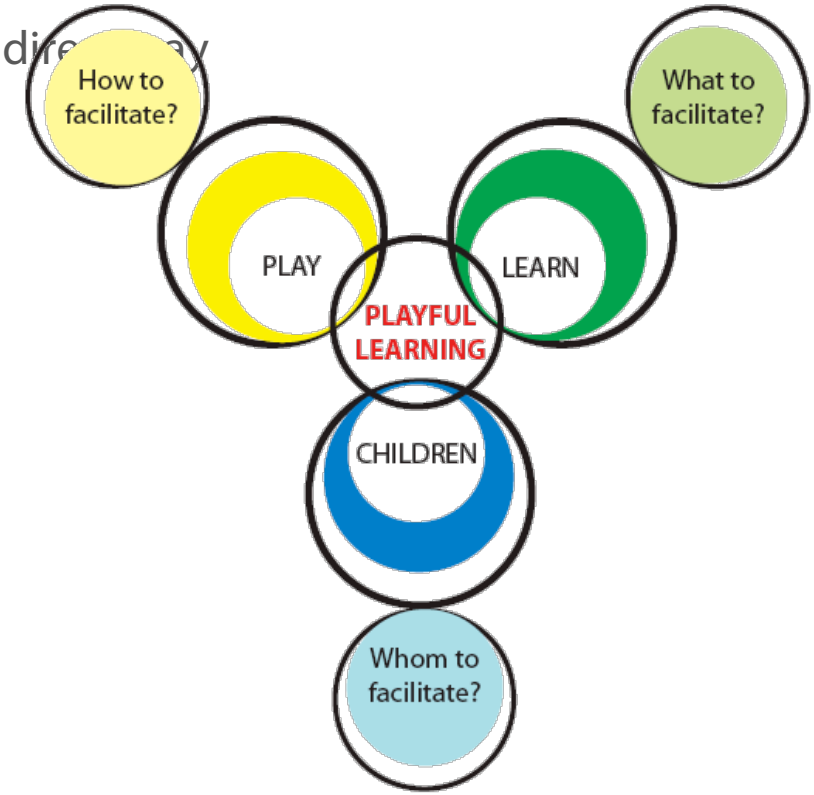
- To motivate them towards an activity

- To facilitate collaborated learning

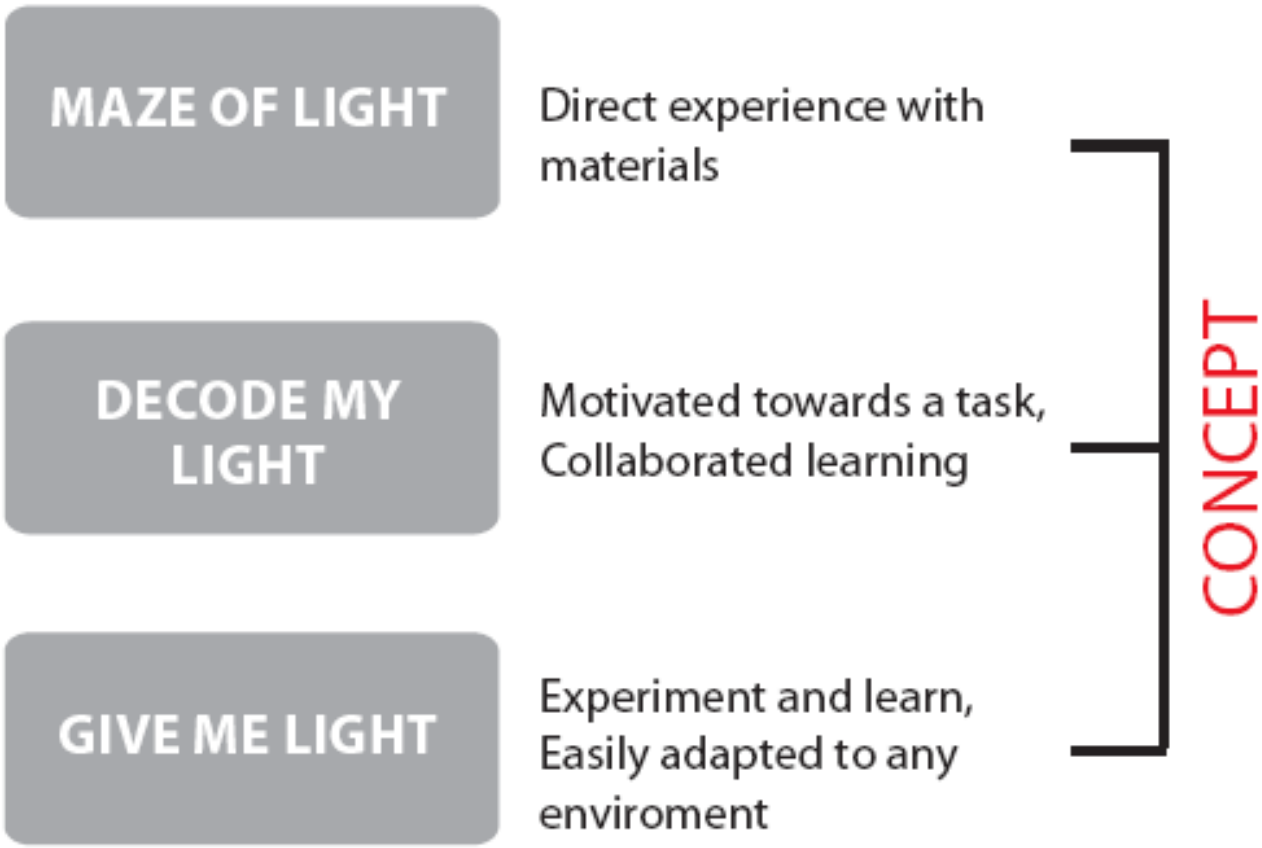


Design Content

- in a way that the child can learn according to his/ her involvement and interest. The design intervention should be receptive to a child's growth
- to learn concepts of 'light' in an indirect way
- to combine with other concepts



Concept generation



Concept generation

- provide direct experience with materials, objects and ideas

- easily accessible and adapted to any environment

- cater to group of children together

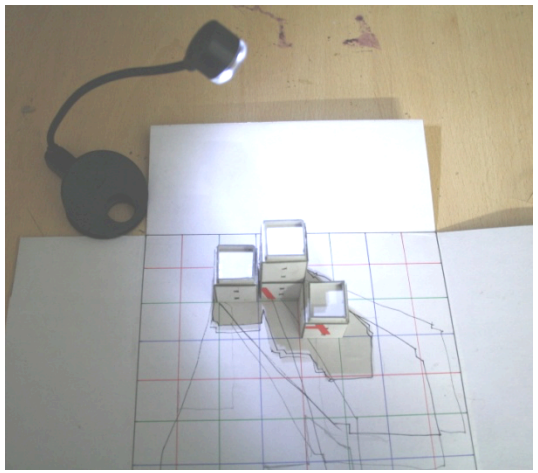
- planned to build enthusiasm towards activity/ activities

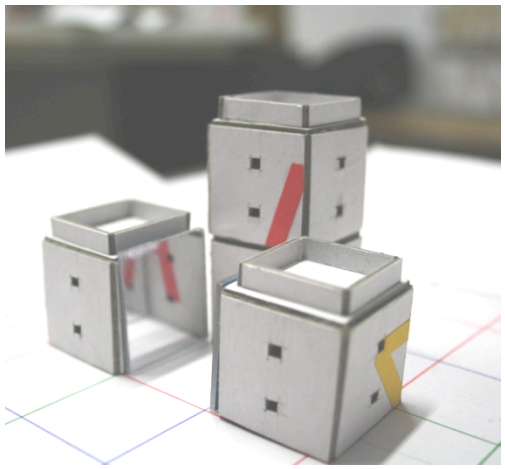
- focus on ‘do’ and ‘learn’ than just ‘learn’

Concept development

Hands-on experience in light, to play with reflections and shadows, the activity kit will have:

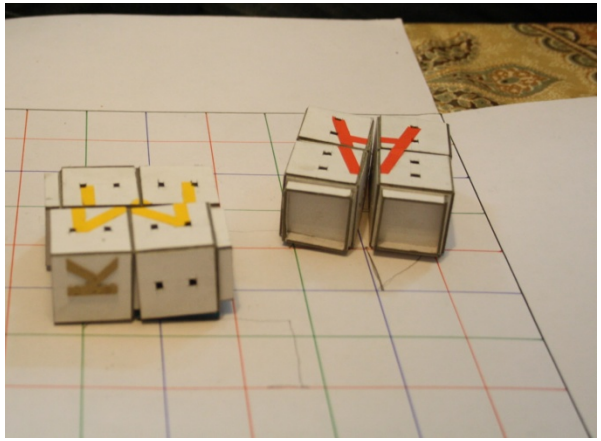
- **Light source (Daylight/ artificial)**
- **Screen/ Base**
- **Mirrors**
- **Objects**





User feedback

- Children at this age demand basic initial instructions
- Letter ‘Z’ was constructed as letter ‘M’
- Once they explored the concept of using the plane mirror, they progressed to use multiple mirrors
- Activity of coding/ decoding of shadows through blocks needs a flexible light source which can be attached to the board and worksheets would be needed to draw shadow Screen/ Base



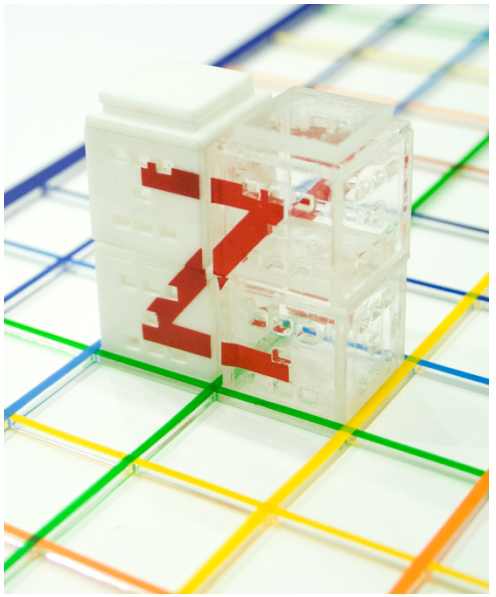
Concept detailing

Blocks:
Each alphabet from A-Z are divided in 4 blocks in two materials i.e. opaque acrylic and transparent acrylic.

6 blocks are made of plastic mirrors on all sides.

Alphabets are divided in 7 categories of colors from VIBGYOR depending on their letter structure.

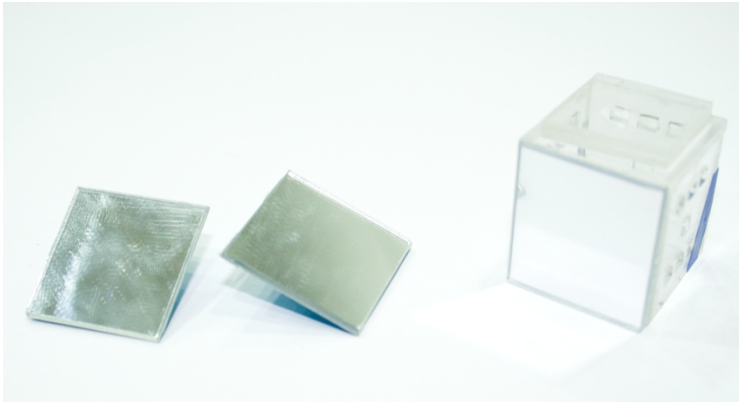
M	A	H	B	F	C	N
W	T	I	D	L	G	Z
V	U	O	P	K	Q	S
		X	R		J	Y



Concept detailing

Objects:
Mirror attachments to learn reflections and symmetry

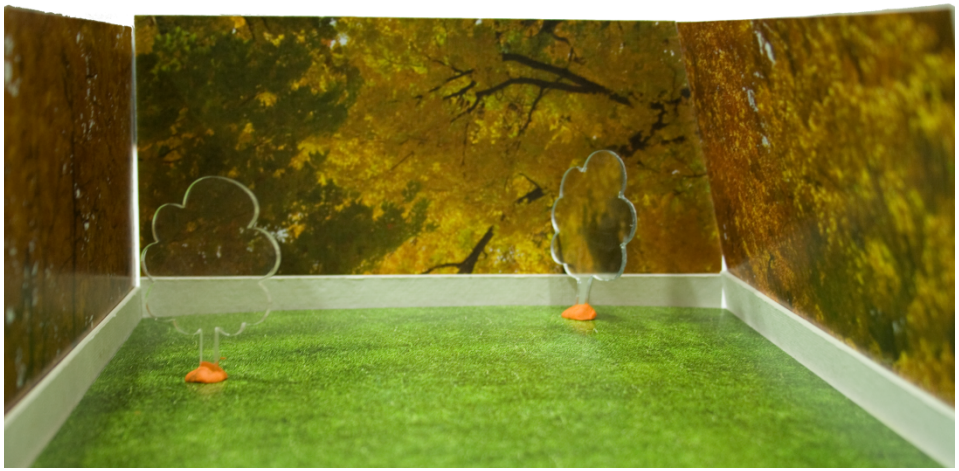
Set of reflected alphabets as attachments

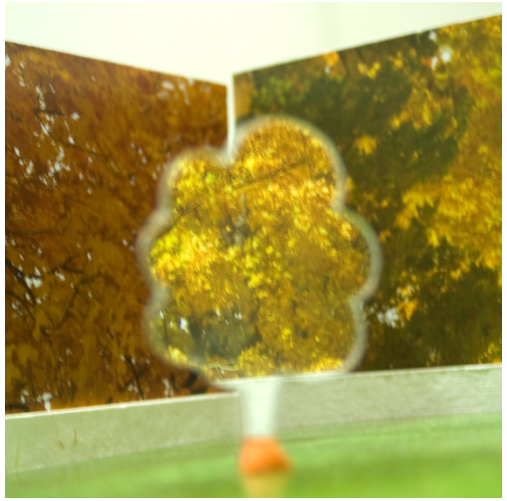


Concept detailing

Environment:
Screens of tree patterns and grass base are made.

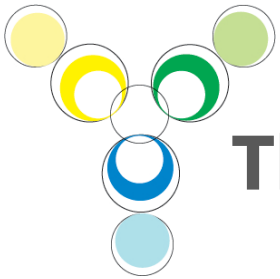
Trees of different materials build interesting environments.





Concept detailing

Children can play and examine the concepts on their own at the first level,
can play activities suggested in the manual at the second level
and conduct activities suggested to know the laws at the third level.



Thank you.