

The Progression of children learning about 'nature' in our living world

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BIOLOGY We are BIOLOGY

BIOLOGY.

3 dimensions which a child gradually learns

OBSERVATIONS

SYSTEMS

TIME

Organisms.

micro to Planetary.

Changes over time

We start learning at Observations, experiential- our needs- eating, effects of expressing such; Noticing other living things, other phenomena and components in everyday environment.

N.B. CHILDREN DON'T OBSERVE AND THINK IN 'SILOS' AS WE OFTEN TEACH SCIENCE.
ALL ARE INTER RELATED

Investigating the Living world



A complex network

- Early observations are of form and function, internal - hunger, eating, excreting, sleeping, moving and of external patterns of change- day and night
- Gradual recognition of systems, such as category of living things , plants and animals, and of their form and function
- But hierarchy of biological systems from universal categories populations down to cell and atomic level

Interactions of organisms with SYSTEMS

- Organism functions depend on physical systems, work over time
- Organisms interact with other organisms, food, reproduction, young 'apprenticeship' particularly in mammals, with environment and systems - habitats, predator- prey, adaptations
- Interactions over time, but changes in organisms, metamorphosis, life cycle. Adaptations, evolution .
- Time is most difficult for the learner

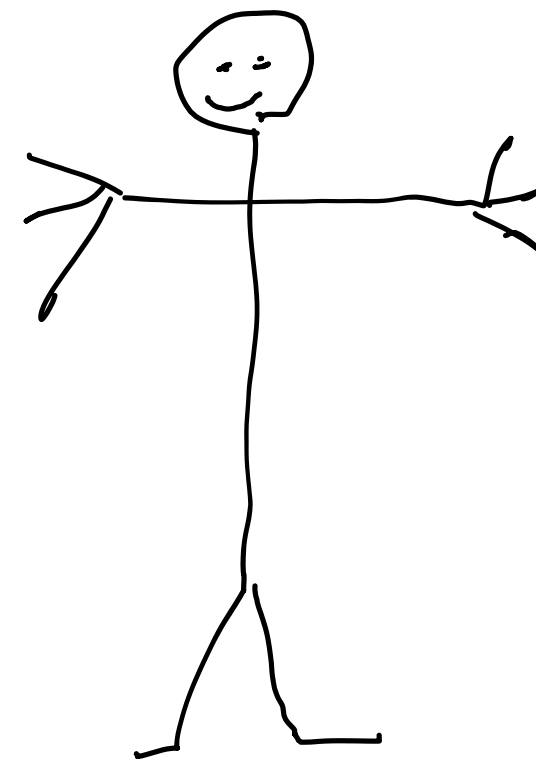
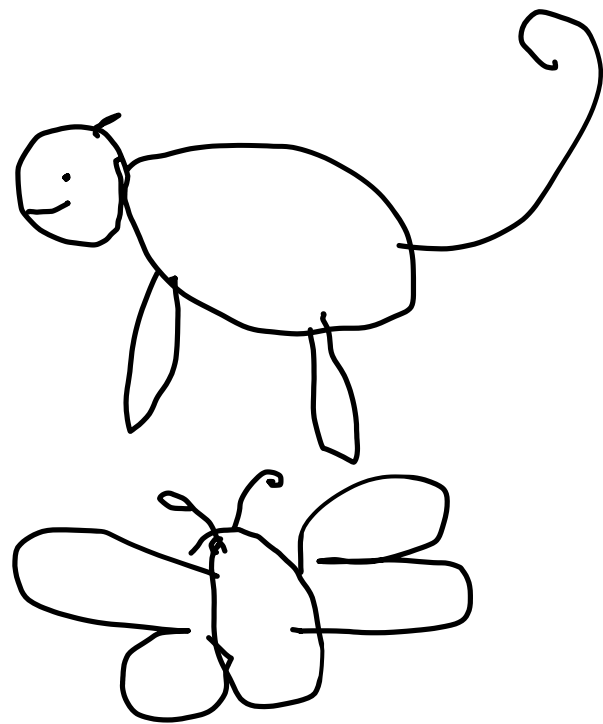
STAGES In Understanding of ANIMALS -based on self

The 'ME' approach

- 1 Animals move (so do I, Like me)
- 2. Differ in shape, size, covering, appendages, behavior, habitats (Like me - like I have and need)
- 3. Animals I know have a basic shape, head and anus (Like me) and means of moving (Like me) and Sensing what is around (Like me)

Tadpole man

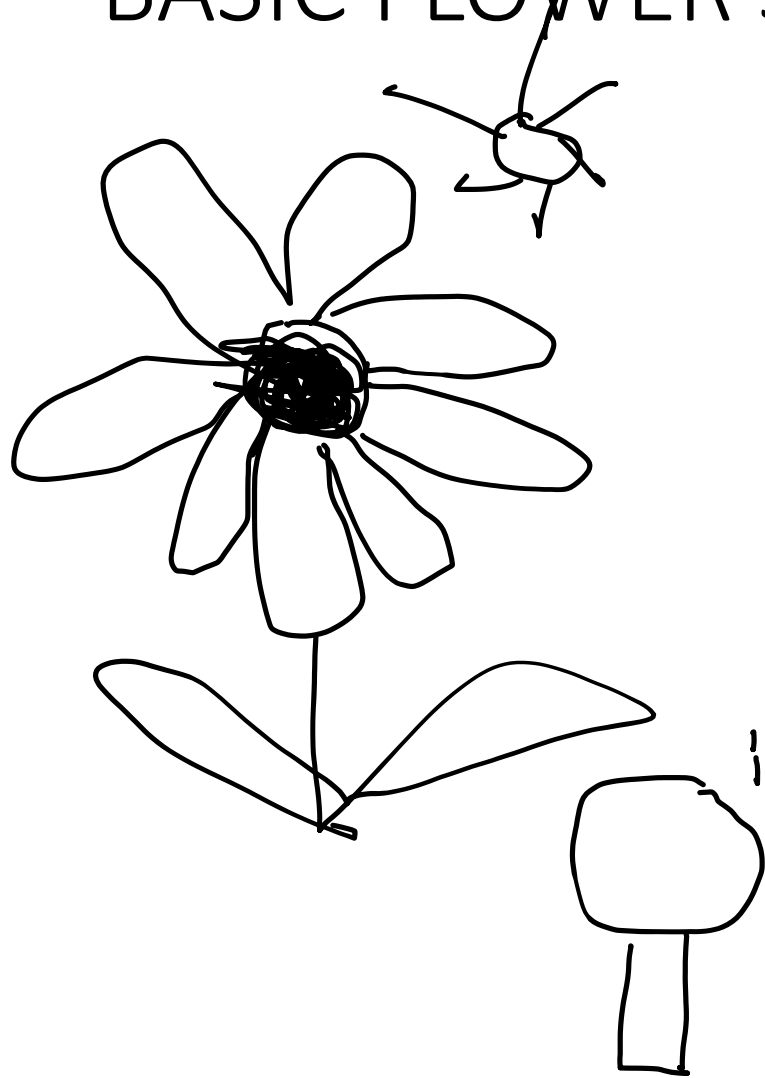
- Basic shapes



- 1 Walk, fly, swim, slither OBSERVATIONS
- 2. Different shape, size, covering, appendages, behaviour, habitats,
- 3. Have basic shape, head and anus and means of moving and sensing
- 4. Have needs, assume are met in same way as theirs are-Anthromorphic. SYSTEMS
- 5 Different animals live in different places- land, water, sky, climates
- 6. Shape, colour, form, habits. Change as animal grows over time- metamorphosis, aging. SYSTEMS TIME
- 7. Begin to recognise different kinds and name them – superordinate, ordinate and sub ordinate – Animal- mammal- me, Animal Birds- -robin, Animal- fish- goldfish

If ordinate name unknown called by its superordinate name Bird, Fish, cat, fly. Butterfly but bug, Fluffy but cat

BASIC FLOWER SHAPES.



Plant progression

- Flowers- recognition OBSERVATIONS
- Plants- basic shapes- e.g. draw lollipop trees
- Flowers and other plants have green parts
- Don't move from place to place. SYSTEMS
- Not all have flowers. Flowers coloured- have parts can pull off
- Have parts underground – child can see if pull up (and they do)
- Many don't look same as year passes(TIME)not always flowers, parts above the ground, leaves on some trees
- Seeds are part of plants, can grow into new plants. Seeds are in fruits
SYSTEMS

BEHAVIOURS. ANIMALS MAY LOOK LIKE TOY REPLICAS BUT DO BEHAVE INDEPENDENTLY OF CHILD'S ACTION

Animals. Not same as toy animals, not such simple shape, can make by selves

Real Animal have basic shapes similar to the soft toys they may have .

Animals have different body coverings fur most met- can not be stroked wrong way.
No grabbing , real animals object

Animals have same basic needs but not e.g. same food, live in same kinds of places-
adapted to habitat, climate

Live in air, Sea, land, under soil, on other animals and plants

Change as get older, gradually. Suddenly - look like different animals -caterpillar

Begin to recognise specific animals and give names. Learn first exemplar. Plane- bird

Animals are not the Disney' like, with human attributes- speak, bipedal, 2 arms 2 legs.

Plant behaviour

- Names – limited - other than flowers/plant (same) weeds, tree, bush vegetable, grass- human use categories
- Recognise basic shapes. Usually stalk Compositae flower, leaves.
- Recognise some plants have different colours
- Don't move, fruits and seeds moved for them- Dandelion clocks - seeds grow. Baby plant anonymous in beginning
- Need water to stay upright otherwise 'go flop so parts droop-
- Seeds are part of a plant. Grow in soil, have food for baby in seed(peas, beans) roots grow down first
- Some animals visit plants for food, bees, butterflies, cows, goats, sheep.

Earth Science Biology's Cinderella - ecology

- Used as a signpost
- Different soils- different plants
- Gets dry and wet
- Characteristic earth coverings are clues, e.g. Desert. Snow, Forest, Grasslands and what living things are there

REMEMBER!

- No silos in children's observations and interpretations
- Lost in formal education. The big picture. Taught in 'bytes'

Thanks.

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IDEAS GESTATING!