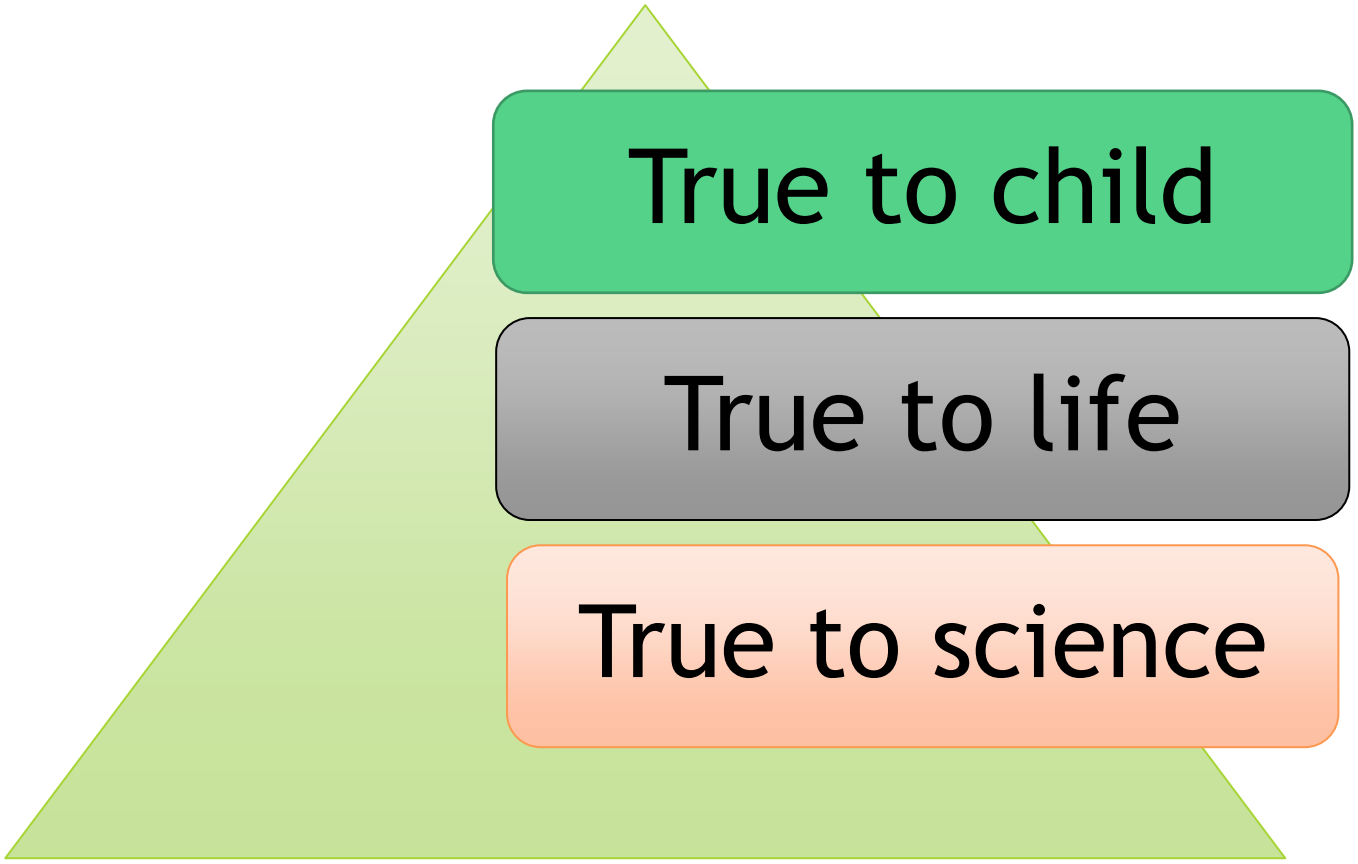
Teaching of Science in NCF-2005

What is Science ?

Science is a dynamic, expanding body of knowledge, covering ever new domains of experience.

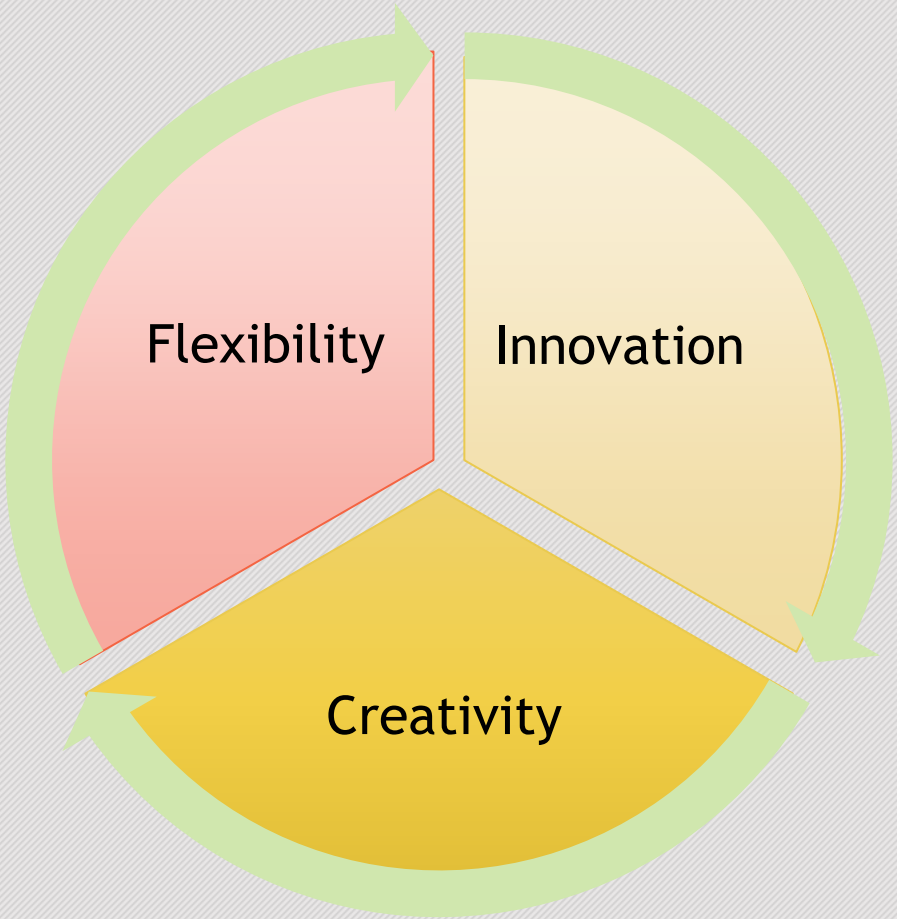
What is Good Science Education ?



Role of Science

- Iterating role- Helping people escape from the vicious cycle of poverty, ignorance and superstition
- Transforms traditions fields of works (Agriculture and Industry)
- Leads to the emergence of new field of work

Skills to be incorporated in Science Education



Observe the physical and Biological environment carefully

-Any meaningful pattern

-Any relations

-Make new tools

-Use new tools to interact with nature

-Build conceptual models to understand the world around you.

Scientific method involves-

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Observation

(Looking for regularities and pattern)

-Making hypothesis

-Devising qualitative or mathematical models

-Deducing consequences

-Verification or falsification of theories.

(Through observations and controlled experiments)

-Arriving at principles, theories and laws

(Governing natural world)

Science curriculum

- **Cognitive validity-**

  (Content, process, language and pedagogical practices are age appropriate and within cognitive reach of the child)

- **Content validity-**

  (Curriculum must convey significant and correct scientific information)

Science curriculum (contd)

- **-Process validity-**
  - Curriculum should engage the learner in acquiring the methods and processes.
  - Process that leads to
    - Generation and validation of scientific knowledge
    - Nurture the natural curiosity in science
    - Nurture the creativity of child in science
  - Process Validity helps students 'learning to learn'.
- **Historical validity requires**
  - Informed- Include historical perspective
  - Enable- how concepts evolve over time.
  - View- View Science as social enterprise.

Environmental Validity – Requires

- Science be placed in wider context
- Local to global
- Enable to appreciate issues at the interface of Science, Technology and society.
- Equip him/her with requisite knowledge and skill to enter the world of work.

Ethical Validity

- requires and promotes
  - Validity of honesty
  - Objectivity
  - Cooperation
  - Freedom from fear & prejudice
  - and inculcate in the learner a concern for life and
  - preservation of the environment

Curriculum at Different Stages-Primary Stage

Objectives	Content	Pedagogy	Assessment
To nurture the curiosity of child about the world Cognitive and psychomotor skills -observe -classify -infer	Natural environment Artifacts, People Basics of estimation and measurements Science and social science should be integrated as environment studies Basics of Health	Observation, Classification, Inferring or drawing conclusion Speaking Reading And Writing	No formal periodic test', grades or marks and No detention

Curriculum at Different Stages- Upper Primary Stage

Objectives	Content	Pedagogy	Assessment
Derive Scientific concepts Engaged in learning	Principles of Science Environment and Health Reproductive & sexual health (Content at this stage is not a diluted version of secondary stage)	Familiar experiences Working with hands Activities & surveys Experiments Group Activities Discussions with peer and teachers Organization of data Display through exhibitions	Continuous & periodic assessments (Unit Tests) Term end tests Direct grades No Detention

Curriculum at Different Stages- Secondary Stage

Objectives	Content	Pedagogy	Assessment
Engaged in learning science as a composite discipline	Working with hands and tools to design more technological modules Application of science in their local and global environment	Activities and its Analysis Local projects	On the basis of critical analysis and its Interpretations and conceptualizations

Thanks