

BUREAU OF CATHOLIC EDUCATION

**PILOT PROJECT**

***Low-cost Equipment for Teaching  
Science and Technology  
in Primary Schools***

Science and Technology Education Project  
for Mauritius  
(STEP-M)

**PROJECT FUNDED BY  
MAURITIUS RESEARCH COUNCIL**

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- ☀ MIE 1974 - 1986
  - ☀ United Nations 1986 - 1996
  - ☀ B.E.C 1997 - 2003
  - ☀ MOESR 2004 - to date
  - ☀ IUBS 1975 - to date
- ☀ Author of: **Environmental  
Management, Issues & Solutions**  
John Wiley / UNEP, 1992

**Science and Technology Education  
Project for Mauritius**

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contributed ideas.

## WHAT IS SCIENCE ?



### TO THE TEACHER



- Science is a study of nature. It is our way of understanding how things work in the world around us.
- Science is concerned with both the non-living or material things and with the living world.
- Science is a way of thinking and a way of doing things.



## WHAT IS SCIENCE ?

### TO THE TEACHER



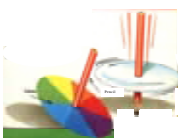
- Scientists always look for evidence, scientists always verify through observation and experimentation BEFORE coming to a conclusion.

The scientific way of thinking is thus an invaluable lesson for life.



## LOW-COST EQUIPMENT FOR SCIENCE TEACHING

A baby who looks at her hand, a baby who brings her toe into her mouth, "tastes" her first toy or listens to the sound of a rattle is already exploring the world around him/her. He/she is already doing Science.



A kitten which runs out in the rain and comes back all wet and cold and which alters its behaviour "*next time it rains I stay indoors*" is already applying correctly the result of good observation.

## LOW COST EQUIPMENT FOR SCIENCE TEACHING

Children show a natural interest in their own body and self. This is SELF-INTEREST in the best sense of the phrase.



Children will explore the world in which they live, always in relation to how these elements of the environment affect them-their life, feelings and sensations.



## Children will look

- At rainwater, seawater, rivers and lakes, waves and tide
- At air, wind, cyclones, clouds, smoke and rainbows
- At animals swimming, running, flying, creeping
- At plants, big and small, mushrooms, waterweeds, moulds
- At sunlight, heat, sound and noises of all types, lighting and thunder
- At the thousand of man-making things from houses to public buildings, shops, bicycles, motor-vehicles, planes and boats and the product of technology : radios, TV sets, kettles, locks and keys, plastic and glass things, wooden and metallic things.
- At the food they eat, the clothes they wear, the things they utilise in everyday life.



The list is inexhaustible.



## Primary School Science



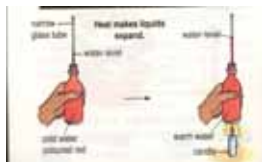
It is generally agreed that in a modern science course at any level, **equipment must be available for practical work by pupils.**

**Guided discovery and enquiry are essential to learning science.** They are necessary in order to interest children in the art of enquiry.



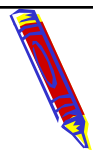
## Primary School Science

Equipment and apparatus can be expensive and even very expensive.



Low-cost equipment have a lot of advantages over expensive and imported equipment. These advantages are not just financial but, as you will see, also **pedagogical**.

## ADVANTAGES OF LOW-COST EQUIPMENT



### CHEAPNESS

Equipment made of paper, string, cardboard, nails, tins, etc, **cost nothing**. Others only a few rupees. **Low-cost** equipment is often **no-cost** equipment.



### SAME PRINCIPLES

Low-cost Equipment illustrate the **same principles** as imported, expensive equipment.



### ACTIVE METHOD, GROUPWORK, FUN



Making and using low-cost equipment **encourages the active method and groupwork and can be great fun**. Each pupil can



make his or her own equipment and even bring it home. It's the active method of learning at its best.

### STRENGTH

Made of paper, wood, metal, string, etc. such equipment can be treated roughly with no damage. Hence pupils feel more at ease.



## FROM SCHOOL TO HOME

Pupils can bring equipment home or remake them at home often with great keenness and pride. They will show to their parents, brothers, sisters and friends what they have discovered at school.



*"Ma ! Ma Vini mo montré toi  
qui mo finn apran lékol zordi"*

A case of parental education through children.

## ECONOMY

### Effective use of limited funds

Many science equipment for several experiments can be produced under their low-cost variety. (Unfortunately there are, as yet, no low-cost computers)



## A BIT OF HISTORY

This introduction to the use of low-cost equipment for science teaching at primary level in Mauritius is an occasion to pay tribute to an old Englishman, Mr. Peter Davis, who first initiated us to this art at the MIE way back in 1975, in the context of the introduction of a new discipline called Integrated Science.



## MAIN STAGES OF THE THE PILOT PROJECT

### Pre-test

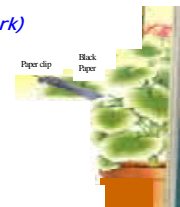
*(For each theme, we use a set of multiple choice questions, where possible Pictorial Objective Tests (Zimbabwe 1982))*

### Experiments (Workshop & Group work)

### Post-Test

### Analysis and Results

### Conclusion and Application



## RESULTS OF PILOT PROJECT

### PILOT GROUP

Pretest Av. 15.14/20  
Post-Test Av. 18.14/20  
Difference +3.0/20

### CONTROL GROUP

Pretest Av. 15.0/20  
Post-Test Av. 16.2/20  
Difference +1.2/20(approx.)

**SIGNIFICANT DIFFERENCE**  $3.0 - 1.2 = 1.8/20$   
or + 9% (approx.)

## WHY SCIENCE IN PRIMARY SCHOOLS? WHY PRACTICAL SCIENCE IN PRIMARY SCHOOLS?

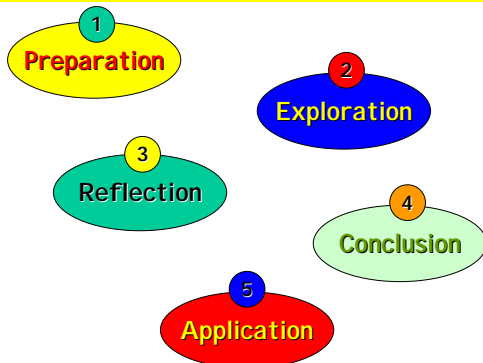
### Aims

*Intrigues, delights, develops*

### Interactive model of teaching to investigate key ideas in science

*Uses what child bring from home; encourages learners to generate questions as a basis of their investigations; values central role of teacher in creating worthwhile learning interactions; values interaction between learners during group work.*

Both teacher and learner are involved together  
in the 5 steps of the interactive model



Thank you for your attention