POLICY

SCIENCE

RATIONALE

Science involves people investigating the living, physical, material and technological components of their environment and being able to understand the world in which they live and work.

PURPOSES

1. To promote science as an activity that is carried out by all people as part of their everyday life.

2. To encourage students to develop skills for investigating and stimulate their natural sense of curiosity in scientific ways.

3. To assist students to sue knowledge and skills to make decisions about the usefulness and value of ideas and technology.

4. To help students to explore scientific issues and make responsible decisions within their community and their environment.

GUIDELINES

Science learning at Bombay School will provide:

  i. Programmes which are appropriate for the particular learners in their class and which reflect local community characteristics, resources and education outside the classroom.

 ii. A variety of teaching strategies and assessments which cater for different learning styles with consideration given to gender, cultural and special needs issues.

iii. Emphasis on practical investigation, exploration and learning by doing.

 iv. For Science to be linked with other areas of the curriculum.

  v. Through teachers, a supportive atmosphere of mutual respect where all experiences, ideas and beliefs which students bring into the learning situation are valued as starting points for learning.

CONCLUSION

Students will develop scientific skills and attitudes, and knowledge, which will enable them to make sense of their world and foster a lasting interest in the exploration and interpretation of their environment.

Formulated by Staff: August 2002
Approved:
Review Date:

IMPLEMENTATION OF BOMBAY SCHOOL POLICY

CHOOSING CONTEXTS

1. When planning programmes, all strands will be incorporated to achieve a balance.
   The contextual strands are:
   - Making Sense of the Living World
   - Making Sense of the Physical World
   - Making Sense of the Material World
   - Making Sense of the Planet Earth and Beyond
   The integrating strands are:
   - Making Sense of the Nature of Science and its Relationship to Technology
   - Developing Scientific Skills and Attitudes.
2. Planning will be integrated across other curriculum areas where appropriate.
3. Term Overviews will be used each term. A coverage sheet will ensure that a balance across the strands occurs.
4. Science contexts chosen should relate to the children's experiences and interest.
5. The contexts for learning are outline in a three-yearly cycle for Junior, Middle and Senior areas of the school.
6. Four major studies are to be undertaken per year, one from each strand, with other minor studies at the teachers' discretion.

LEARNING AND TEACHING

a) The teacher's role is that of a model learner, motivator, challenger, developer of ideas, communicator of different ideas, and resource person.
b) Children must have the opportunities to ask their own questions, and to have time to investigate them, when exploring contexts.
c) Science activities will involve children building upon ideas already known and give children the opportunity to discuss with others.
d) Varied grouping strategies allows for greater exchange of ideas and co-operative learning.
e) Practical activities related to daily life will help them explore and interpret ideas.

PLANNING

I.   Decide on contexts using the Science Scheme.
II.   Select appropriate achievement aim.
III. Select achievement objective/s for the level appropriate to the children's needs.
IV.   Collect before views (diagnostic assessment)
V.   Define specific learning outcomes appropriate to students' need within a context.
VI.   Plan learning experiences (Keeping in mind children's possible suggestions).

VII.   Consider Maori perspective and equal opportunity for all students.

VIII.   Plan assessment example using specific learning outcomes.

IX.   Unit planning to be done on planning sheets specific to each individual syndicate.

Examples of planning formats, which include the above, are provided as support material.

STRATEGIES

i)   Hands-on child centered.

ii)   Teaching and learning strategies will include:
- Problem solving
- Use of interactive model
- Inquiry learning and a wide range of activities

Support material is included.

ASSESSMENT

a.   Tasks and procedures should:
- Be consistent with achievement objectives and specific learning outcomes.
- Be compatible with classroom activity.
- Be an integral part of the learning programme.
- Include self and peer assessment.

b.   Children's achievement should be monitored to show progress from before and after views.

c.   Some primary evidence and cumulative records will be kept in line with the school Assessment Policy.

See supporting material for example.

RESOURCES

The Science resources are stored in the Resource Room in coloured boxes. Each box contains a context as listed in the scheme and these are colour-codes thus:
- Living World   - Orange
- Physical World   - Blue
- Material World   - Pink
- Planet Earth & Beyond   - Green

Science equipment is stored below the unit boxes.

BUDGETING

Purchasing of major resources is the responsibility of the science resource person in conjunction with the committee.

A budget is submitted to the Board of Trustees each October and teachers will be asked to submit requests.

Thinking Processes	Useful verbs	Sample Question Stems	Some Potential Activities and Products
		APPLYING BLOOD TAXONOMY OF COGNITIVE PROCESSES	
KNOWLEDGE	Tell List Describe Relate Locate Write Find State Name	What happened after ___ ? How may ___? Who was it that ___ ? Can you name the ___ ? Describe what happened at ___ ? Who spoke to ___? Can you tell why ___ ? Find the meaning of ___ What is ___ ? Which is true / false ___ ?	• Make a list of the main events of the story • Make a time line • Make a facts chart • Write a list of any pieces of information you can remember • List all the animals in the story • Make a chart showing ___ • Make an acrostic poem • Recite a poem
COMPREHENSION	Explain Interpret Outline Discuss Distinguish Predict Restate Translate Compare Describe	Can you write in your own words ___? What do you think could have happened next? What do you think ___? What was the main idea ___? Who was the key character ___? Can you distinguish between ___? Can you provide an example of what you mean? Can you provide a definition for ___?	• Cut out, or draw pictures to show a particular event. • Illustrate what you think the main idea was • Make a cartoon strip showing the sequence of events • Write and perform a play based on the story • Retell the story in your own words • Paint a picture of some aspect of the story you like • Write a summary report of the event • Prepare a flow chart to illustrate the sequence of events • Make a colouring book

Thinking Processes	Useful verbs	Sample Question Stems	Some Potential Activities and Products
APPLICATION	Solve Show Use Illustrate Calculate Construct Complete Examine Classify	Do you know of another instance where ___? Could this have happened in ___? Can you group by characteristics such as __? Which factors would you change is ___? Can you apply the method used to some experience of your own? What questions would you ask of ___? From the information given, can you develop a set of instructions about ___? Would this information be useful if you had a ___ ?	• Construct a model to demonstration how it will work. • Make a diorama to illustrate an important event. • Make a scrapbook about the area of study • Make a paper-mache model to include relevant information about an event. • Take a collection of photographs to demonstrate a particular point. • Make up a puzzle game using ideas from the study area. • Make a clay model of an item in the material. • Design a market strategy for your product using a known strategy as a model. • Dress a doll in suitable costume. • Paint a mural using the same materials. • Write a textbook about _____ for others to learn.
ANALYSIS	Analyse Distinguish Examine Compare Contrast Investigate Categorise Identify Explain Separate Advertise	Which events could not have happened? If ____ happened, what might the ending have been? How was this similar to ____? What was the underlying theme of ___? What do you see as other possible outcomes? Why did _____ changes occur? Can you compare your ____with that presented in ____? Can you explain what must have happened when ____? How is ___ similar to ____? What are some of the problems of ____? Can you distinguish between ____? What were some of the motives behind ____? What was the turning point in the game? What was the problem with ____?	• Design a questionnaire to gather information. • Write a commercial to sell your new product. • Conduct an investigation to produce information to support a view. • Make a flow chart to show the critical stages you have identified. • Construct a graph to illustrate selected information • Make a jigsaw puzzle. • Make a family tree showing relationships. • Put on a play about the study area. • Write a biography of a person studied. • Prepare a report about the area of study. • Arrange a party. Make all the arrangements and record the steps needed. • Review a work of art, in terms of form, colour and texture.

Thinking Processes	Useful verbs	Sample Question Stems	Some Potential Activities and Products
SYNTHESIS	Create Invent Compose Predict Plan Construct Design Imagine Improve Propose Devise Formulate	Can you design a ____ to ____? Why not compose a song about ____? Can you see a possible solution to ___? If you had access to all resources, how would you deal with ____? Why don't your devise your own way to ____? What would happen if ____? How many ways can you ____? Can you create new and unusual uses for _____? Can you write a new recipe for a tasty dish? Can you develop a proposal which would _____?	• Invent a machine to do a specific identified task. • Design a building to house your study. • Create a new product. Give it a name and plan a marketing campaign. • Write about your feeling in relation to ___ • Write a TW show, play, puppet show, ___ • Design a record, book or magazine cover for ___ • Make up a new language code and writer material using it. • Sell you idea about _____ • Devise a way to _____ • Compose a rhythm or put new words to a known melody.
EVALUATION	Judge Select Choose Decide Justify Debate Verify Argue Recommend Asses Discuss Rate Prioritise Determine	Is there a better solution to ____? Judge the value of ____ Can you defend your position about ____? Do you think ____ is a good or bad thing? How would you have handled ____? What changes would you recommend? Do you believe ____? Are you a ____ person? How would you feel if ____? How effective are ____? What do you think about ____?	• Prepare a list of criteria to judge a ___ show. Indicate priority and ratings. • Conduct a debate about an issue of special interest. • Make a booklet about five rules you see as important. Convince others. • Form a panel to discuss views, e.g. 'Learning at School'. • Write a letter to ___ advising on changed needed at ____ • Write a half-yearly report. • Prepare a case to present your view about.