MINISTRY OF EDUCATION MALAYSIA

Integrated Curriculum for Primary Schools

Curriculum Specifications

SCIENCE
Year 2

Curriculum Development Centre
Ministry of Education Malaysia
2002

First published 2002

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THE NATIONAL PHILOSOPHY

Our nation, Malaysia, is dedicated to achieving a greater unity of all her peoples; to maintaining a democratic way of life; to creating a just society in which the wealth of the nation shall be equitably shared; to ensuring a liberal approach to her rich and diverse cultural traditions; to building a progressive society which shall be oriented toward modern science and technology;

We, her peoples, pledge our united efforts to attain these ends guided by these principles:

BELIEF IN GOD
LOYALTY TO KING AND COUNTRY
UPHOLDING THE CONSTITUTION
RULE OF LAW
GOOD BEHAVIOUR AND MORALITY

NATIONAL PHILOSOPHY OF EDUCATION

Education in Malaysia is an on-going effort toward developing the potential of individuals in a holistic and integrated manner, so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious based on a firm belief in and devotion to God. Such an effort is designed to produce Malaysian citizens who are knowledgeable and competent, who possess high moral standards and who are responsible and capable of achieving a high level personal well being as well as being able to contribute to the harmony and betterment of the family, society and the nation at large.

NATIONAL SCIENCE EDUCATION PHILOSOPHY

In consonance with the National Education Philosophy,
science education in Malaysia nurtures a
Science and Technology Culture by focusing
on the development of individuals who are competitive,
dynamic, robust and resilient and able to
master scientific knowledge and technological competency

PREFACE

The aspiration of the nation to become an industrialised society depends on science and technology. It is envisaged that success in providing quality science education to Malaysians from an early age will serve to spearhead the nation into becoming a knowledge society and a competitive player in the global arena. Towards this end, the Malaysian education system is giving greater emphasis to science and mathematics education.

The Science curriculum has been designed not only to provide opportunities for students to acquire science knowledge and skills, develop thinking skills and thinking strategies, and to apply this knowledge and skills in everyday life, but also to inculcate in them noble values and the spirit of patriotism. It is hoped that the educational process en route to achieving these aims would produce well-balanced citizens capable of contributing to the harmony and prosperity of the nation and its people.

The Science curriculum aims at producing active learners. To this end, students are given ample opportunities to engage in scientific investigations through hands-on activities and experimentations. The inquiry approach, incorporating thinking skills, thinking strategies and thoughtful learning, should be emphasised throughout the teaching-learning process. The content and contexts suggested are chosen based on their relevance and appeal to students so that their interest in the subject is enhanced.

In a recent development, the Government has made a decision to introduce English as the medium of instruction in the teaching and learning of science and mathematics. This measure will enable students to keep abreast of developments in science and technology in contemporary society by enhancing their capability and know-how to tap the diverse sources of information on science written in the English language. At the same time, this move would also provide opportunities for students to use the English language and hence, increase their proficiency in the language. Thus, in implementing the science curriculum, attention is given to developing students' ability to use English for study and communication, especially in the early years of learning.

The development of this curriculum and the preparation of the corresponding Curriculum Specifications have been the work of many individuals over a period of time. To all those who have contributed in one way or another to this effort, may I, on behalf of the Ministry of Education, express my sincere gratitude and thanks for the time and labour expended.

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INTRODUCTION

As articulated in the National Education Policy, education in Malaysia is an on-going effort towards developing the potential of individuals in a holistic and integrated manner to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious. The primary and secondary school science curriculum is developed with the aim of producing such individuals.

The Level One Primary Science curriculum is designed to stimulate pupils' curiosity and develop their interest as well as enabling pupils to learn more about themselves and the world around them through activities.

The curriculum is articulated in two documents: the syllabus and the curriculum specifications. The syllabus presents the aims, objectives and the outline of the curriculum content for a period of 3 years for level one primary science. The curriculum specifications provide the details of the curriculum. which includes the aims and objectives of the curriculum, brief descriptions on thinking skills and thinking strategies, scientific skills, scientific attitudes and noble values, teaching and learning strategies, and curriculum content. The curriculum content provides the learning objectives, suggested learning activities, the intended learning outcomes, and vocabulary.

AIMS

The aim of the primary school science curriculum is to develop pupils' interest and creativity through everyday experiences and investigations that promote the acquisition of scientific and thinking skills as well as the inculcation of scientific attitudes and values.

OBJECTIVES

The level one science curriculum aims to:

1. Stimulate pupils' curiosity and develop their interest about the world around them.
2. Provide pupils with opportunities to develop science process skills and thinking skills.
3. Develop pupils' creativity.
4. Provide pupils with basic science knowledge and concepts.
5. Inculcate scientific attitudes and positive values.
6. Create an awareness on the need to love and care for the environment.

SCIENTIFIC SKILLS

Science emphasises inquiry and problem solving. In inquiry and problem solving processes, scientific and thinking skills are utilised. Scientific skills are important in any scientific investigation such as conducting experiments and carrying out projects.

Scientific skills encompass science process skills and manipulative skills.

Science Process Skills

Science process skills enable students to formulate their questions and find out the answers systematically.

Descriptions of the science process skills are as follows:

Observing	Using the sense of hearing, touch, smell, taste and sight to find out about objects or events.
Classifying	Using observations to group objects or events according to similarities or differences.
Measuring and Using Numbers	Making quantitative observations by comparing to a conventional or non-conventional standard.
Making Inferences	Using past experiences or previously collected data to draw conclusions and make explanations of events.
Predicting	Making a forecast about what will happen in the future based on prior knowledge gained through experiences or collected data.
Communicating	Using words or graphic symbols such as tables, graphs, figures or models to describe an action, object or event.
Using space-time relationship	Describing changes in parameter with time. Examples of parameters are location, direction, shape, size, volume, weight and mass.
Interpreting data	Giving rational explanations about an object, event or pattern derived from collected data.
Defining operationally	Defining all variables as they are used in an experiment by describing what must be done and what should be observed.
Controlling variables	Naming the fixed variable, manipulated variable, and responding variable in an investigation.

Making Hypotheses	Making a general statement about the relationship between a manipulated variable and a responding variable to explain an observation or event. The statement can be tested to determine its validity.
Experimenting	Planning and conducting activities to test a hypothesis. These activities include collecting, analysing and interpreting data and making conclusions.

Manipulative Skills

Manipulative skills in scientific investigation are psychomotor skills that enable students to:

- Use and handle science apparatus and substances.
- Handle specimens correctly and carefully.
- Draw specimens and apparatus.
- Clean science apparatus.
- Store science apparatus.

THINKING SKILLS

Thinking is a mental process that requires an individual to integrate knowledge, skills and attitude in an effort to understand the environment.

One of the objectives of the national education system is to enhance the thinking ability of students. This objective can be achieved through a curriculum that emphasises thoughtful learning. Teaching and learning that emphasises thinking skills is a foundation for thoughtful learning.

Thoughtful learning is achieved if students are actively involved in the teaching and learning process. Activities should be organised to provide opportunities for students to apply thinking skills in conceptualisation, problem solving and decision-making.

Thinking skills can be categorised into critical thinking skills and creative thinking skills. A person who thinks critically always evaluates an idea in a systematic manner before accepting it. A person who thinks creatively has a high level of imagination, is able to generate original and innovative ideas, and modify ideas and products.

Thinking strategies are higher order thinking processes that involve various steps. Each step involves various critical and creative thinking skills. The ability to formulate thinking strategies is the ultimate aim of introducing thinking activities in the teaching and learning process.

Critical Thinking Skills

A brief description of each critical thinking skill is as follows:

Attributing	Identifying criteria such as characteristics, features, qualities and elements of a concept or an object.
Comparing and Contrasting	Finding similarities and differences based on criteria such as characteristics, features, qualities and elements of a concept or event.
Grouping and Classifying	Separating and grouping objects or phenomena into categories based on certain criteria such as common characteristics or features.
Sequencing	Arranging objects and information in order based on the quality or quantity of common characteristics or features such as size, time, shape or number.
Prioritising	Arranging objects and information in order based on their importance or priority.
Analysing	Examining information in detail by breaking it down into smaller parts to find implicit meaning and relationships.
Detecting Bias	Identifying views or opinions that have the tendency to support or oppose something in an unfair or misleading way.
Evaluating	Making judgements on the quality or value of something based on valid reasons or evidence.
Making Conclusions	Making a statement about the outcome of an investigation that is based on a hypothesis.

Creative Thinking Skills

A brief description of each creative thinking skill is as follows:

Generating Ideas	Producing or giving ideas in a discussion.
Relating	Making connections in a certain situation to determine a structure or pattern of relationship.
Making Inferences	Using past experiences or previously collected data to draw conclusions and make explanations of events.
Predicting	Making a forecast about what will happen in the future based on prior knowledge gained through experiences or collected data.
Making Generalisations	Making a general conclusion about a group based on observations made on, or some information from, samples of the group.
Visualising	Recalling or forming mental images about a particular idea, concept, situation or vision.
Synthesising	Combining separate elements or parts to form a general picture in various forms such as writing, drawing or artefact.
Making Hypotheses	Making a general statement about the relationship between a manipulated variable and a responding variable to explain an observation or event. The statement can be tested to determine its validity.
Making Analogies	Understanding a certain abstract or complex concept by relating it to a simpler or concrete concept with similar characteristics.
Inventing	Producing something new or adapting something already in existence to overcome problems in a systematic manner.

Relationship between Thinking Skills and Science Process Skills

Science process skills are skills that are required in the process of finding solutions to a problem or making decisions in a systematic manner. It is a mental process that promotes critical, creative, analytical and systematic thinking. Mastering of science process skills and the possession of suitable attitudes and knowledge enable students to think effectively.

The mastering of science process skills involves the mastering of the relevant thinking skills. The thinking skills that are related to a particular science process skill are as follows:

Science Process Skills	Thinking Skills
Observing	Attributing Comparing and contrasting Relating
Classifying	Attributing Comparing and contrasting Grouping and classifying
Measuring and Using Numbers	Relating Comparing and contrasting
Making Inferences	Relating Comparing and contrasting Analysing Making inferences
Predicting	Relating Visualising
Using Space-Time Relationship	Sequencing Prioritising
Interpreting data	Comparing and contrasting Analysing Detecting bias Making conclusions Generalising Evaluating
Defining operationally	Relating Making analogy Visualising Analysing
Controlling variables	Attributing Comparing and contrasting Relating Analysing
Making hypothesis	Attributing Relating Comparing and contrasting Generating ideas Making hypothesis Predicting Synthesising

Science Process Skills	Thinking Skills
Experimenting	All thinking skills
Communicating	All thinking skills

SCIENTIFIC ATTITUDES AND NOBLE VALUES

Science learning experiences can be used as a means to inculcate scientific attitudes and noble values in students. These attitudes and values encompass the following:

- Having an interest and curiosity towards the environment.
- Being honest and accurate in recording and validating data.
- Being diligent and persevering.
- Being responsible about the safety of oneself, others, and the environment.
- Realising that science is a means to understand nature.
- Appreciating and practising clean and healthy living.
- Appreciating the balance of nature.
- Being respectful and well-mannered.
- Appreciating the contribution of science and technology.
- Being thankful to God.
- Having critical and analytical thinking.
- Being flexible and open-minded.
- Being kind-hearted and caring.
- Being objective.
- Being systematic.
- Being cooperative.
- Being fair and just.
- Daring to try.
- Thinking rationally.
- Being confident and independent.

The inculcation of scientific attitudes and noble values generally occurs through the following stages:

- Being aware of the importance and the need for scientific attitudes and noble values.
- Giving emphasis to these attitudes and values.
- Practising and internalising these scientific attitudes and noble values.

Inculcating Patriotism

The science curriculum provides an opportunity for the development and strengthening of patriotism among students. For example, in learning about the earth's resources, the richness and variety of living things and the development of science and technology in the country, students will appreciate the diversity of natural and human resources of the country and deepen their love for the country.

TEACHING AND LEARNING STRATEGIES

Teaching and learning strategies in the science curriculum emphasise thoughtful learning. Thoughtful learning is a process that helps students acquire knowledge and master skills that will help them develop their minds to the optimum level. Thoughtful learning can occur through various learning approaches such as inquiry, constructivism, contextual learning, and mastery learning. Learning activities should therefore be geared towards activating

students' critical and creative thinking skills and not be confined to routine or rote learning. Students should be made aware of the thinking skills and thinking strategies that they use in their learning. They should be challenged with higher order questions and problems and be required to solve problems utilising their creativity and critical thinking. The teaching and learning process should enable students to acquire knowledge, master skills and develop scientific attitudes and noble values in an integrated manner.

Inquiry-discovery emphasises learning through experiences. Inquiry generally means to find information, to question and to investigate a phenomenon that occurs in the environment. Discovery is the main characteristic of inquiry. Learning through discovery occurs when the main concepts and principles of science are investigated and discovered by students themselves. Through activities such as experiments, students investigate a phenomenon and draw conclusions by themselves. Teachers then lead students to understand the science concepts through the results of the inquiry. Thinking skills and scientific skills are thus developed further during the inquiry process. However, the inquiry approach may not be suitable for all teaching and learning situations. Sometimes, it may be more appropriate for teachers to present concepts and principles directly to students.

The use of a variety of teaching and learning methods can enhance students' interest in science. Science lessons that are not interesting will not motivate students to learn and subsequently will affect their performance. The choice of teaching methods should be based on the curriculum content, students' abilities, students' repertoire of intelligences, and the availability of resources and infrastructure. Different teaching and learning activities should be planned to cater for students with different learning styles and intelligences.

The following are brief descriptions of some teaching and learning methods.

Experiment

An experiment is a method commonly used in science lessons. In experiments, students test hypotheses through investigations to discover specific science concepts and principles. Conducting an experiment involves thinking skills, scientific skills, and manipulative skills.

In the implementation of this curriculum, besides guiding students to carry out experiments, where appropriate, teachers should provide students with the opportunities to design their own experiments. This involves students drawing up plans as to how to conduct experiments, how to measure and analyse data, and how to present the results of their experiment.

Discussion

A discussion is an activity in which students exchange questions and opinions based on valid reasons. Discussions can be conducted before, during or after an activity. Teachers should play the role of a facilitator and lead a discussion by asking questions that stimulate thinking and getting students to express themselves.

Simulation

In simulation, an activity that resembles the actual situation is carried out. Examples of simulation are role-play, games and the use of models. In role-play, students play out a particular role based on certain pre-determined conditions. Games require procedures that need to be followed. Students play games in order to learn a particular principle or to understand the process of

decision-making. Models are used to represent objects or actual situations so that students can visualise the said objects or situations and thus understand the concepts and principles to be learned.

Project

A project is a learning activity that is generally undertaken by an individual or a group of students to achieve a particular learning objective. A project generally requires several lessons to complete. The outcome of the project either in the form of a report, an artefact or in other forms needs to be presented to the teacher and other students. Project work promotes the development of problem-solving skills, time management skills, and independent learning.

Visits and Use of External Resources

The learning of science is not limited to activities carried out in the school compound. Learning of science can be enhanced through the use of external resources such as zoos, museums, science centres, research institutes, mangrove swamps, and factories. Visits to these places make the learning of science more interesting, meaningful and effective. To optimise learning opportunities, visits need to be carefully planned. Students may be involved in the planning process and specific educational tasks should be assigned during the visit. No educational visit is complete without a post-visit discussion.

Use of Technology

Technology is a powerful tool that has great potential in enhancing the learning of science. Through the use of technology such as television, radio, video, computer, and Internet, the teaching and learning of science can be made more interesting and effective. Computer simulation and animation are effective tools for the teaching and learning of abstract or difficult science concepts. Computer simulation and animation can be presented through courseware or Web page. Application tools such, as word processors, graphic presentation software and electronic spreadsheets are valuable tools for the analysis and presentation of data.

CONTENT ORGANISATION

The science curriculum is organised around themes. Each theme consists of various learning areas, each of which consists of a number of learning objectives. A learning objective has one or more learning outcomes.

Learning outcomes are written in the form of measurable behavioural terms. In general, the learning outcomes for a particular learning objective are organised in order of complexity. However, in the process of teaching and learning, learning activities should be planned in a holistic and integrated manner that enables the achievement of multiple learning outcomes according to needs and context. Teachers should avoid employing a teaching strategy that tries to achieve each learning outcome separately according to the order stated in the curriculum specifications.

The Suggested Learning Activities provide information on the scope and dimension of learning outcomes. The learning activities stated under the column Suggested Learning Activities are given with the intention of providing some guidance as to how learning outcomes can be achieved. A suggested activity may cover one or more learning outcomes. At the same time, more than one activity may be suggested for a particular learning

outcome. Teachers may modify the suggested activity to suit the ability and style of learning of their students. Teachers are encouraged to design other innovative and effective learning activities to enhance the learning of science.

Learning about Living Things

Learning Objectives	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
Living Things and Non-living Things				
Pupils should learn to make observations and use these to group things into living things and non-living things.	Pupils walk around the school compound and list out the things that they see. Pupils group them into living things and non-living things. Pupils give reasons why they say something is a living thing e.g. it needs food and water, it breathes, it moves, it grows and it can produce young. Pupils look at the grouping that they did earlier. Pupils redo their grouping based on the characteristics of living things	**Pupils** • make a list of the things they see. • group what they see into living things and non-living things. • record the groups in the form of a table. • state the characteristics of living things, i.e.: ▪ they need food and water ▪ they breathe ▪ they can move ▪ they grow ▪ they can produce young.	Pupils must be supervised during the walk around the school compound. Allow pupils to group living and non-living things according to their own understanding. Discuss with pupils why they say something is a living thing. Have them look back at grouping that they did to see if they still agree with it. Allow pupils to redo the grouping according to their new understanding of living things.	living things non-living things grows food water breathe move produce

Learning Objectives	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
	Pupils watch videos of animals eating, moving, growing and producing young. Pupils discuss that plants: a) need food and water, b) grow c) can grow new plants.	• recognise humans, animals and plants as living things		
Ourselves				
Pupils should learn		**Pupils**		
that they need to food and water to stay alive	Pupils talk about what will happen if they do not eat and drink for a few days.	• state that they need to eat and drink to stay alive.	Discuss with pupils what will happen to them if they do not eat and drink for 1 day, 2 days, 3 days.	
that they need to eat different kinds of food to be healthy.	Pupils list out the foods that they eat for breakfast or lunch over one week. Pupils present the list of foods they eat in a week in the form of a pictograph. Pupils talk about what the pictogragh shows e.g. the food that is eaten the most in one week	• list some of the different foods that they eat. • present the list of foods they eat in the form of a pictograph and say what this shows e.g. the food that is eaten most.		rice fish chicken eggs meat vegetables fruits healthy

Learning Objectives	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
	Pupils talk about the importance of eating different foods to stay healthy. Pupils talk about food that: a) give energy, e.g. rice, bread b) help you grow, e.g. fish, chicken c) help you stay healthy e.g. fruits, vegetables	• recognise that they need to eat different foods to stay healthy. • state the kinds of food that: ▪ give energy ▪ help you grow ▪ help you stay healthy		
that we grow and change as we grow older.	Pupils look at photographs of themselves since birth to the present. Pupils suggest ways in which they have changed since they were born. Pupils talk about how they might change as they grow older. Pupils compare clothes and shoes which were worn when they were younger to the clothes and shoes they wear now. Pupils compare handprints/footprints among members of their families.	• describe changes in themselves since birth. • state that they grow in height, size and weight.		taller crawling walking running jumping talking size height weight

Learning Objectives	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
	Pupils compare records of their weight and height from birth to the present.			heavier bigger
Animals				
Pupils should learn		**Pupils**		
what animals need to live.	Pupils bring some pets or pictures of pets to classroom. Pupils talk about the needs of pets. Pupils discuss the needs of different animals.	• state that animals need food, water and air to stay alive.		food water air
the different foods that animals eat.	Pupils watch videos of animals eating. Pupils list down the names of the animals and the food they eat. Pupils visit a zoo at feeding time to observe what animals eat.	• list the foods eaten by some animals. • state that some animals: ▪ eat plants ▪ eat other animals. ▪ eat plants and other animals		plants grass leaves seeds animals meat
that animals grow	Pupils are given a set of pictures of animals from baby to adult. Pupils arrange them in order from baby to adult.	• state that animals grow in size and weight. • state that animals change as they grow.		calf chick duckling kitten

Learning Objectives	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
	Pupils match picture of animals to their babies. Pupils listen to stories accompanied by pictures about animals changing as they grow e.g. The Ugly Duckling. Pupils keep tadpoles to observe the changes from tadpole to frog. Pupils record the changes. Pupils visit a butterfly farm to observe the different stages of growth of a butterfly , from egg to butterfly.	• identify baby animals that look like their parents. • identify baby animals that do not look like their parents. • describe in what ways the baby animals are different from their parents.	Have pupils release the frogs in a suitable place.	
Plants				
Pupils should learn that plants need the right amount of water for healthy growth	Pupils grow a plant from seeds e.g. beans. Pupils water the plants with different volumes of water.	**Pupils** • Measure a specific volume of water. • observe and measure a growing plant	Teachers can guide pupils on how to measure a specific volume of water, e.g. 1 teaspoon, 2 teaspoons etc	taller bigger more

Learning Objectives	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
	Pupils observe a plant growing and record the height, number of leaves.	• record the observations in a chart. • State that plants need water to grow but too much water may kill them.	.	
that flowering plants produce seeds which grow into new plants.	Pupils observe a plant, with fruit. e.g. balsam plant. Pupils cut open the fruit to look at the seeds. Pupils plant the seeds to grow a new plant. Match seeds to plants , e.g. balsam, papaya, rubber, tomato.	• recognise that flowering plants produce seeds which can grow into new plants. • Identify seeds and the plants.	Have pupils collect seeds from different plants.	fruit seeds

Learning about the World Around Us

Learning Objectives	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
Long or Short				
Pupils should learn		**Pupils**		
to observe and compare lengths	Pupils look at two objects to compare their lengths or heights. Pupils look at pictures of objects to compare their lengths or heights. Pupils compare their heights by standing next to each other.	• state which object is longer or taller.		taller longer shorter straw string
to measure length using non-standard tools.	Pupils suggest ways to measure the length or height of an object. Pupils measure length or height using non-standard tools e.g. using a straw, a piece of string etc. Pupils record the length or height of and object in non-standard measurement e.g. two straws long.	• describe ways to measure length. • measure the length of an object using a non-standard tool. • record the length or height of an object in non-standard measurement in a table.		

Learning Objectives	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
	Pupils compare their heights by using non-standard measurement.			
The Magic of Batteries				
Pupils should learn		**Pupils**		
about things that use batteries.	Pupils discuss in groups and make a list of things that use batteries. Pupils are given pictures/video and are asked to identify the things in the picture that use batteries.	• identify things that use batteries. • list things that use batteries.		battery toys radio torchlight
how to use a battery.	Pupils are given a battery and are asked to insert batteries into an alarm clock or toy. Pupils observe the change to the alarm clock or toy when the battery is inserted. Pupils observe what happens if the battery is reversed.	• are able to use batteries correctly. • recognise that batteries need to be inserted correctly for them to function. • describe how to insert a battery correctly	Use alarm clocks or toys that need only one battery. Ensure that the toy is switched on. Ensure that the alarm clock is set to ring when the battery is inserted.	

Learning Objectives	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
	Pupils are asked to state how to correctly insert a battery.		If pupils have inserted the battery wrongly, have them try again.	
how to make a complete circuit.	Pupils are given a battery, wire and a bulb. Pupils draw possible ways of connecting the battery, wire and bulb to make the bulb light up. Pupils test out their drawings by building the circuit. Pupils draw and explain what they did to make the bulb light up.	• describe different ways in which the battery, wire and bulb can be connected. • are able to make a complete circuit using a battery, wire and a bulb. • are able to draw their working circuit and explain their drawing.	Allow pupils to try different ways of connecting the battery, wire and bulb until they get the bulb to light up.	bulb wire

Learning Objectives	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
Mixing things				
Pupils should learn that some materials can dissolve in water and some cannot.	Pupils are given materials such as sugar, salt, coffee, flour, pepper, sand. Pupils are asked to add a glass of water to each of the materials and to stir it. Pupils are asked to observe and state their observations. Pupils check their observations by: a) tasting the solutions b) filtering the solutions.	**Pupils** • are able to recognise that some materials can dissolve in water. • record their observations in a table.	Taste only solutions of edible materials.	water salt sugar coffee pepper curry powder dissolve

Learning Objectives	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
Push and pull				
Pupils should learn		**Pupils**		
that pushing and pulling can change the shape of objects	Pupils are given a variety of materials, e.g. plasticine, sponge, dough. Pupils are asked to change the shape of the materials and describe the action they used to do so, e.g. pull, twist, stretch. Pupils say whether each action is a push or a pull, e.g. stretching is a pull, squeezing is a push.	• describe what they did to change the shape of materials.	A twist is a combination of a push and a pull	push pull twist stretch squeeze
that pushing or pulling can make things speed up, slow down or change direction	Pupils are given a toy car or a ball and asked to make it move faster, slower or to change direction. Pupils say how they made the toy car or ball move faster, move slower or change direction, e.g. the car moves faster when I push it harder.	• describe what they did to make things speed up, slow down or change direction.		faster slower direction faster slower

Learning Objectives	Suggested Learning Activities	Learning Outcomes	Notes	Vocabulary
to make predictions and to test them	Pupils are given toy cars of different sizes and are asked to predict which car will travel the furthest. Pupils test their predictions by making the toy cars move and measuring the distance traveled by each car in standard or non-standard measurement. Pupils discuss whether their comparison was fair, e.g. I pushed the big toy car harder so the comparison was unfair.	• predict which toy car will travel the furthest. • measure distances in appropriate units. • suggest and give reasons whether a comparison was fair or not.		

ACKNOWLEDGEMENTS

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2002