



KEMENTERIAN PENDIDIKAN MALAYSIA

KURIKULUM STANDARD SEKOLAH RENDAH

Sains

Dokumen Standard Kurikulum dan Pentaksiran

TAHUN 1
(EDISI BAHASA INGGERIS)



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Dokumen Standard Kurikulum dan Pentaksiran

Tahun 1

(Edisi Bahasa Inggeris)

Bahagian Pembangunan Kurikulum

Mei 2016

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CONTENT

Rukun Negara	v
Falsafah Pendidikan Kebangsaan	vi
Falsafah Pendidikan Sains Kebangsaan	vii
Kata Pengantar	ix
Introduction	1
Aims	2
Objectives.....	2
Framework of the Standard-Based Curriculum for Primary School	2
Focus	4
21 st Century Skills	13
Higher Order Thinking Skills	14
Teaching and Learning Strategies	15
Elements Across the Curriculum	20
Assessment	22
Content Organisation	25

Inquiry in Science	
Scientifik Skills	28
Science Room Rules	34
Life Science	
Living Things and Non-Living Things ..	36
Human	38
Animals	39
Plants	40
Physical Science	
Magnet	42
Material Science	
Absorption ..	44
Earth and Space	
Earth	46
Technology and Sustainability of Life	
Basic of Building	47



RUKUN NEGARA

BAHAWASANYA Negara kita Malaysia mendukung cita-cita hendak:
Mencapai perpaduan yang lebih erat dalam kalangan seluruh masyarakatnya;
Memelihara satu cara hidup demokratik;
Mencipta satu masyarakat yang adil di mana kemakmuran negara
akan dapat dinikmati bersama secara adil dan saksama;
Menjamin satu cara yang liberal terhadap tradisi-tradisi
kebudayaannya yang kaya dan berbagai corak;
Membina satu masyarakat progresif yang akan menggunakan sains
dan teknologi moden;

MAKA KAMI, rakyat Malaysia, berikrar akan menumpukan seluruh tenaga dan usaha kami untuk mencapai cita-cita tersebut berdasarkan prinsip-prinsip yang berikut:

**KEPERCAYAAN KEPADA TUHAN
KESETIAAN KEPADA RAJA DAN NEGARA
KELUHURAN PERLEMBAGAAN
KEDAULATAN UNDANG-UNDANG
KESOPANAN DAN KESUSILAN**

FALSAFAH PENDIDIKAN KEBANGSAAN

“Pendidikan di Malaysia adalah suatu usaha berterusan ke arah lebih memperkembangkan potensi individu secara menyeluruh dan bersepadu untuk melahirkan insan yang seimbang dan harmonis dari segi intelek, rohani, emosi dan jasmani, berdasarkan kepercayaan dan kepatuhan kepada Tuhan. Usaha ini adalah bertujuan untuk melahirkan warganegara Malaysia yang berilmu pengetahuan, berketerampilan, berakhlak mulia, bertanggungjawab dan berkeupayaan mencapai kesejahteraan diri serta memberikan sumbangan terhadap keharmonian dan kemakmuran keluarga, masyarakat dan negara”

Sumber: Akta Pendidikan 1996 (Akta 550)

FALSAFAH PENDIDIKAN SAINS KEBANGSAAN

Selaras dengan Falsafah Pendidikan Kebangsaan, pendidikan sains di Malaysia memupuk budaya Sains dan Teknologi dengan memberi tumpuan kepada perkembangan individu yang kompetitif, dinamik, tangkas dan berdaya tahan serta dapat menguasai ilmu sains dan keterampilan teknologi.

Sumber: MOSTI

KATA PENGANTAR

Kurikulum Standard Sekolah Rendah (KSSR) yang dilaksanakan secara berperingkat mulai tahun 2011 telah disemak semula bagi memenuhi dasar baharu di bawah Pelan Pembangunan Pendidikan Malaysia (PPPM) 2013-2025 supaya kualiti kurikulum yang dilaksanakan di sekolah rendah setanding dengan standard antarabangsa. Kurikulum berasaskan standard yang menjadi amalan antarabangsa telah dijemakan dalam KSSR menerusi penggubalan Dokumen Standard Kurikulum dan Pentaksiran (DSKP) untuk semua mata pelajaran yang mengandungi Standard Kandungan, Standard Pembelajaran dan Standard Pentaksiran.

Usaha memasukkan Standard Pentaksiran di dalam dokumen kurikulum telah mengubah landskap sejarah sejak Kurikulum Kebangsaan dilaksanakan di bawah Sistem Pendidikan Kebangsaan. Menerusinya murid dapat ditaksir secara berterusan untuk mengenalpasti tahap penguasaannya dalam sesuatu mata pelajaran, serta membolehkan guru membuat tindakan susulan bagi mempertingkatkan pencapaian murid.

DSKP yang dihasilkan juga telah menyepadukan enam tunjang Kerangka KSSR, mengintegrasikan pengetahuan,

kemahiran dan nilai, serta memasukkan secara eksplisit Kemahiran Abad Ke-21 dan Kemahiran Berfikir Aras Tinggi (KBAT). Penyepaduan tersebut dilakukan untuk melahirkan insan seimbang dan harmonis dari segi intelek, rohani, emosi dan jasmani sebagaimana tuntutan Falsafah Pendidikan Kebangsaan.

Bagi menjayakan pelaksanaan KSSR, pengajaran dan pembelajaran guru perlu memberi penekanan kepada KBAT dengan memberi fokus kepada pendekatan Pembelajaran Berasaskan Inkuiri dan Pembelajaran Berasaskan Projek, supaya murid dapat menguasai kemahiran yang diperlukan dalam abad ke-21.

Kementerian Pendidikan Malaysia merakamkan setinggi-tinggi penghargaan dan ucapan terima kasih kepada semua pihak yang terlibat dalam penggubalan KSSR. Semoga pelaksanaan KSSR akan mencapai hasrat dan matlamat Sistem Pendidikan Kebangsaan.

Dr. SARIAH BINTI ABD. JALIL
Pegarah
Bahagian Pembangunan Kurikulum

INTRODUCTION

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

Malaysia is moving towards becoming a developed nation, should establish the scientific, progressive, inventive and foresight community, despite of having the advantages of the latest technologies, but also as a contributor to the future establishment of scientific and technological civilisation. For this achievement, we need to establish a critical, creative and competent citizen who practices the culture of science and technology.

Benchmarking of Science curriculum with high achievement countries in international assessments has been done to ensure it is relevant and comparable to other countries in the world.

Malaysian science curriculum encompasses three core science subjects and four elective science subjects. The Core

Science Subjects are Primary School Science, Lower Secondary Science and Upper Secondary Science. The Elective Science subjects offered in upper secondary are Physics, Chemistry, Biology and Additional Science.

The Core Science subject for primary and secondary school is designed to improve science literacy by providing a basic knowledge of science for pupils to become science literate and able to master the science at the upper secondary level. The core science subjects for upper secondary is designed to produce pupils with science literacy, innovative, and able to apply scientific knowledge, capable in making decisions and solving problems in real life.

Elective science subject prepares pupils who have the tendency in science to further their studies in pre-university level. This group of pupils will embark on careers in science and technology which plays a role in national development.

AIMS

The aim of Science Standard Curriculum for primary is to instil interest and develop creativity amongst pupils through experience and investigation so as to master knowledge in science, scientific skills, thinking skills and, scientific attitudes and noble values.

OBJECTIVES

Primary School Science Curriculum aims for the pupils to achieve the following objectives:

1. Using the inquiry approach to fulfil their curiosity about the world around them;
2. Applying scientific skills and thinking skills critically and creatively;
3. Acquiring knowledge on the facts and science concepts;
4. Application of knowledge critically, creatively and analytically in decision making, innovating and problem solving;
5. Applying of scientific attitude and noble values; and
6. Play a role in caring for the environment.

FRAMEWORK OF THE STANDARD-BASED CURRICULUM FOR PRIMARY SCHOOL

Standard-based Curriculum for Primary School (KSSR) is built based on six strands, which are Communication; Spiritual, Attitude and Value; Humanity; Personal Development; Physical Development and Aesthetic; and Science and Technology. The six strands are the main domain that support each other and are integrated with critical, creative and innovative thinking. This integration is aimed at developing the human capital who appreciate noble values based on religion, being knowledgeable, competent, think critically, creatively and innovatively as illustrated in Figure 1.

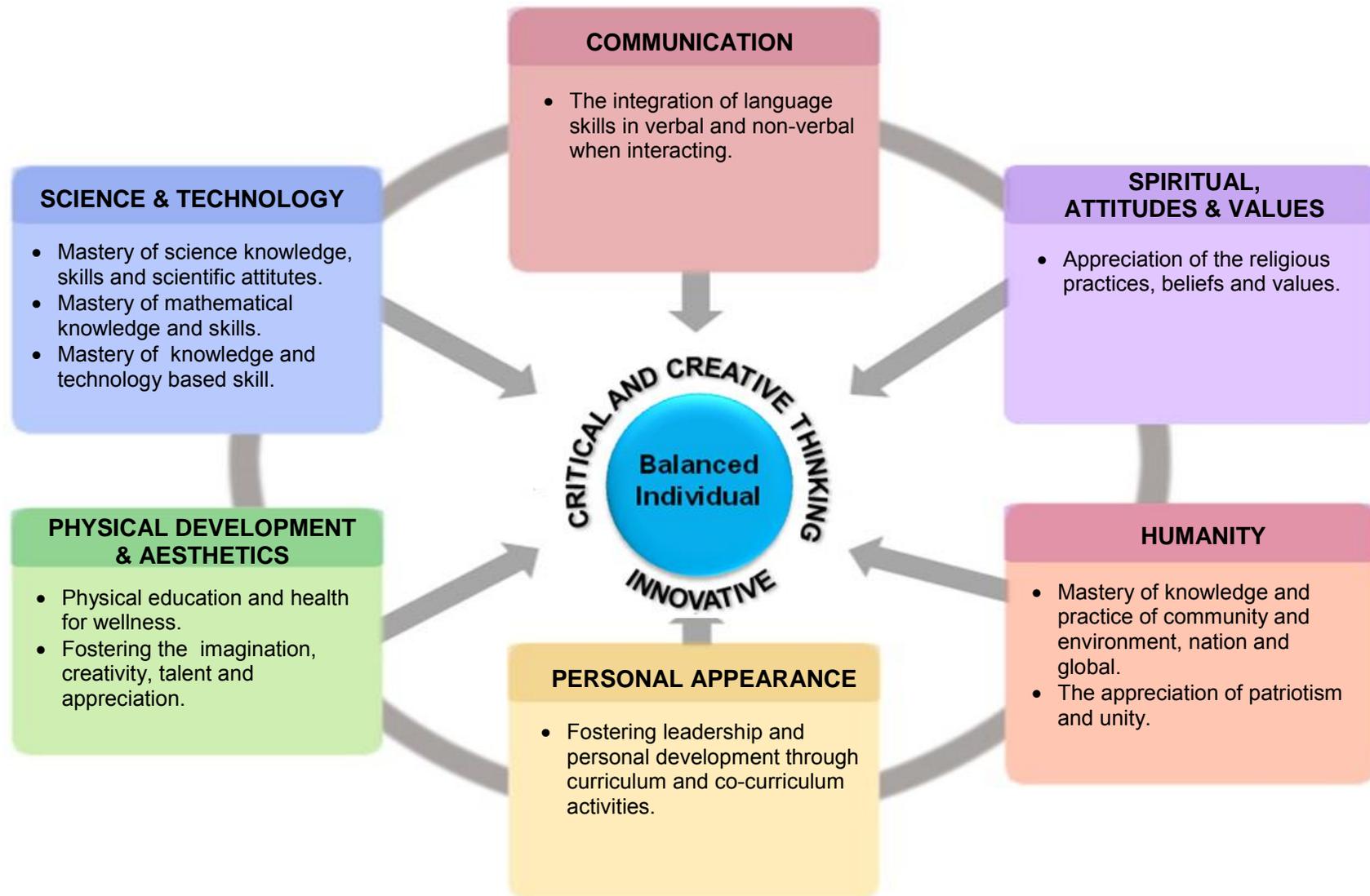


Figure 1: The Framework of Standard-based Curriculum for Primary School

FOCUS

Science subject for primary school focuses on thoughtful learning involving scientific and thinking skills for the acquisition of knowledge through inquiry as the main approach in science education. The science curriculum also aims in preparing pupils to face the rapid technological development and various challenges of the 21st century. The group of pupils that undergo this curriculum will become the human resources in the field of science and technology, who will contribute towards national development.

Content Standards of the Science Curriculum from Year 1 to Form 5 are developed based on the three domains which are knowledge, skills and values. These three domains are being experienced by pupils through inquiry method for producing thoughtful science individual (Figure 2). The inquiry approach includes pupil-centred learning, constructivism, contextual learning, problem-based learning, mastery learning as well as related strategies and methods.

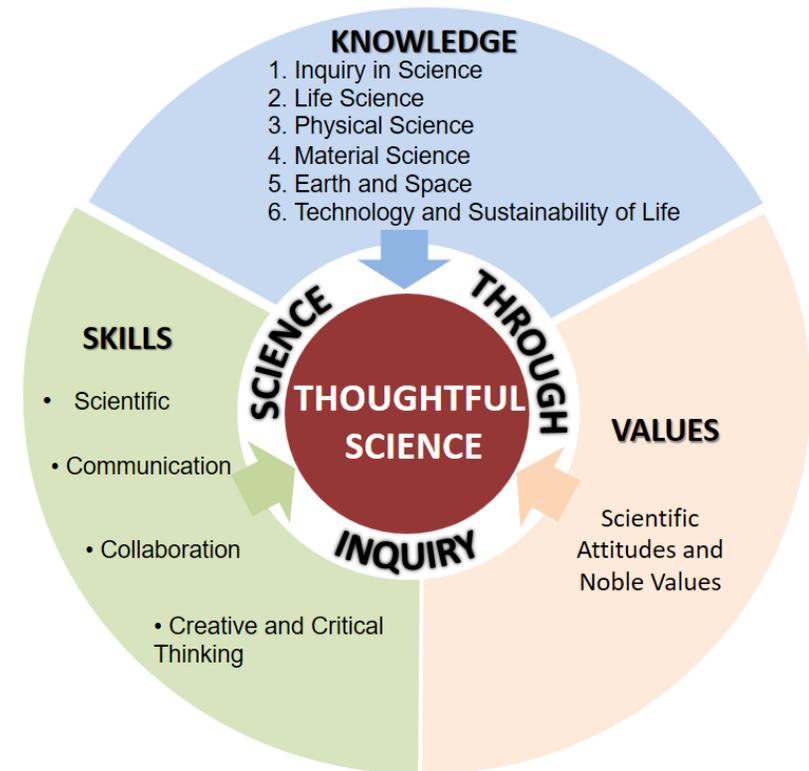


Figure 2: The Conceptual Framework for Science Curriculum

Thoughtful Science

According to the Fourth Edition (2005) of Kamus Dewan, thoughtful has the same meaning as the ability to think and reflect. In the context of science education, thoughtful science refers to the quality of pupils intend to be produced by the national science education system.

Thoughtful science pupils is one who can understand scientific ideas and able to communicate using scientific language, can evaluate as well as apply scientific knowledge and skills responsibly in daily life that involves science and technology, based on attitudes and noble values. Thoughtful science also intends to produce creative and critical individuals to fulfil the 21st century needs, in which the country's competence is highly depends on the abilities of human capitals that can think and generate ideas.

Thoughtful Learning

Thoughtful learning can be achieved if pupils are actively involved in the teaching and learning process. In this process, the teaching and learning activities are planned to encourage pupils to think so that they are able to conceptualized, solved problems and make decisions. Thus, the thinking skills should be applied by pupils.

Thinking skills can be categorized into critical and creative thinking. A person who thinks critically always evaluates ideas systematically before accept them. A person who thinks creatively has highly imaginative, ability to generate original innovative ideas, and also able to modify existing ideas and products.

Thinking strategy is a higher level of thinking process that involves several steps and each step involves critical and creative thinking skills. Thinking strategy is the main function and final aim of the thinking process.

Critical Thinking Skill

Critical thinking skills is the ability to evaluate an idea in a logical and rational manner to make a fair consideration by using reason and reliable evidence.

A brief description of each critical thinking skill is as the following:

Attributing	Identifying 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 objects or events.
Grouping and Classifying	Separating and grouping objects or phenomena into groups 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 or information in order based on their importance or urgency.
Analysing	Processing information in detail by breaking it down into smaller parts to understand concepts or events as well as to find the implicit meanings.
Detecting Bias	Detecting views or opinions that have the tendency to support or oppose something.
Evaluating	Making consideration on the good and bad qualities of something based on valid evidences or propositions.
Making Conclusions	Making a statement about the outcome of an investigation based on a hypothesis or strengthening something based on an investigation.

Creative Thinking Skill

Creative thinking skill is the ability to produce or create something new and valuable by using genuine imaginative skill and unconventional thinking.

A brief description of each creative thinking skill is as the following:

Generating Ideas	Producing ideas related to something.
Relating	Making connections in certain situations or events to find a structure or pattern of relationship.
Making Inferences	Making initial conclusions that are reasonable, that may be true or false to explain events or observations.
Predicting	Making forecast about events based on observations and previous experiences or collected data.
Making Generalisations	Making a general statement about certain matter from a group of observations on samples or some information from that group.

Visualising	Forming perception or making mental images about a particular idea, concept, situation or vision.
Synthesising	Combining separate elements to produce an overall picture in the form of writing, drawing or artefact.
Making Hypotheses	Making a general statement about the relationship between the variables that is assumed to be true to explain an observation or event. The statement can be tested to determine its validity.
Making Analogies	Forming an understanding about a complex or abstract concept by relating it to simple or concrete concepts with similar characteristics.
Inventing	Producing something new or modifying something already in existence to overcome problems in a systematic manner.

Thinking Strategy

Thinking strategy is a way of thinking that is structured and focused to solve problems.

Description of each thinking strategy is as the following:

Conceptualising	Making generalisations towards building of meaning, concept or model based on inter-related specific common characteristics.
Making Decisions	Selecting the best solution from several alternatives based on specific criteria to achieve the intended aims.
Problem Solving	Finding the right solutions in a systematic manner for situations that are uncertain or challenging or unanticipated difficulties.

Besides thinking skills and thinking strategies, another skill emphasised is reasoning. **Reasoning** is a skill used in making logical, rational, fair and just consideration. Mastery of critical and creative thinking skills and thinking strategies is made easier if an individual is able to provide reasoning in inductive and deductive manner. Figure 3 gives an overall picture of the thinking skills and thinking strategies.

Mastery of TSTS through the teaching and learning of science can be developed through the following stages:

1. Introducing TSTS.
2. Practising TSTS with teacher's guidance.
3. Practising TSTS without teacher's guidance.
4. Applying TSTS in new situations and developed with teacher's guidance.
5. Applying TSTS together with other skills to accomplish thinking tasks.

Further information about the stages on the implementation of TSTS can be referred to the guidebook "*Buku Panduan Penerapan Kemahiran Berfikir dan Strategi Berfikir dalam Pengajaran dan Pembelajaran Sains (Curriculum Development Centre, 1999)*"

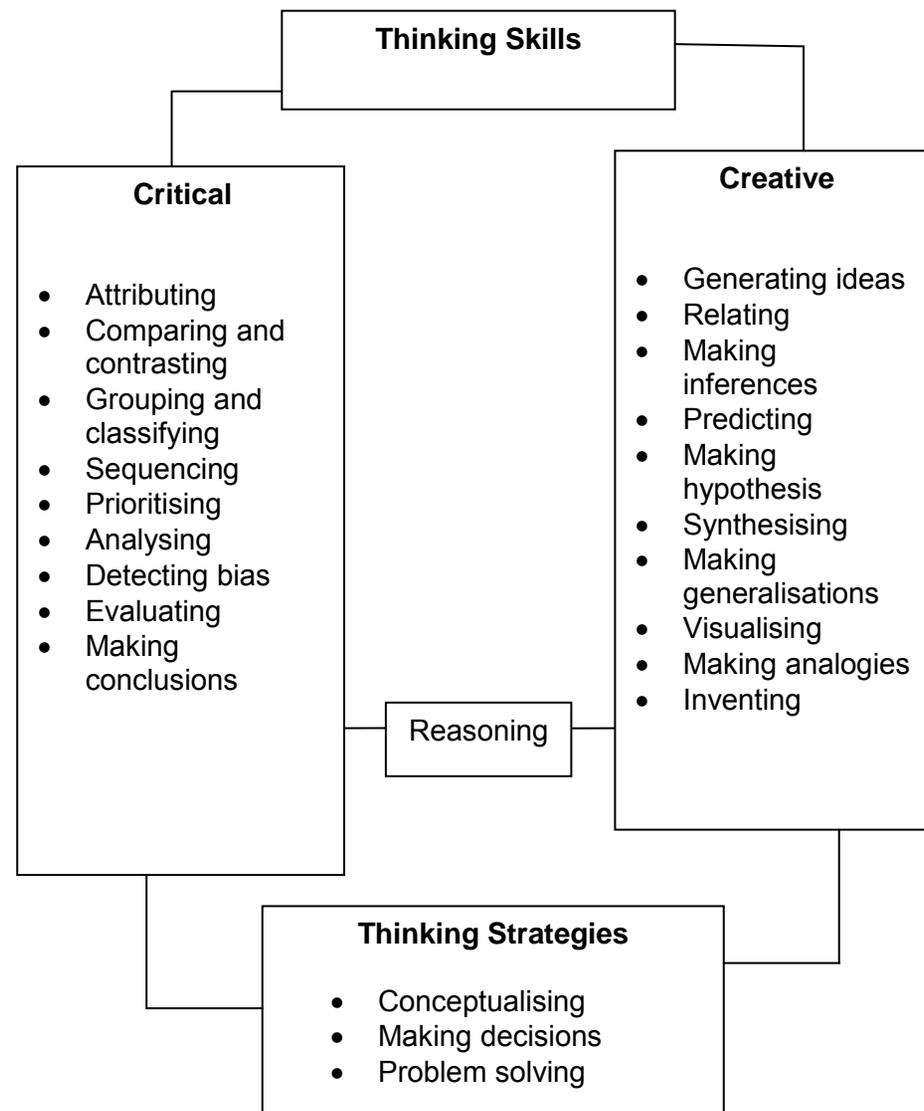


Figure 3: TSTS Model in Science

Scientific Skill

Science emphasizes inquiry and problem solving. In the process of inquiry and solving problem, scientific skills and thinking skills are used. Scientific skill is an important skill when carrying out activities by using scientific methods such as conducting experiments and projects. Scientific skill consists of science process skills and manipulative skills.

Science Process Skills (SPS)

Science Process Skills are skills that are required in the process of finding solutions to a problem or making decisions systematically. It is a mental process that embark critical, creative, analytical and systematic thinking. Mastery of Science Process Skills together with knowledge and suitable attitudes to ensure pupils think effectively.

Description of each science process skill is as the following:

Observing	Using the sense of sight, hearing, touch, taste or smell to gather information about objects and phenomena.
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Classifying	Using observations to group objects or phenomena according to similar characteristics.
Measuring and Using Numbers	Making quantitative observations using numbers or tools with standard units or tools standardised with reference units.
Making Inferences	Making initial conclusions that are reasonable, that may be true or false to explain events or observations.
Predicting	Making forecast about events based on observations and previous experiences or collected data.
Communicating	Accepting, choosing, arranging, and presenting information or ideas in the form of writing, verbal, tables, graphs, figures or models.
Using Space-Time Relationship	Describing changes in parameters such as location, direction, shape, size, volume, weight and mass with time.

Interpreting Data	Giving rational explanations about an object, event or pattern derived from collected data.
Defining Operationally	Defining concepts by describing what must be done and what should be observed.
Controlling Variables	Identifying manipulated variables, responding variables and fixed variables. In an investigation, a variable is manipulated to observe its relationship with the responding variable. At the same time, the other variables are kept the same.
Making Hypothesis	Making a general statement about the relationship between the variables that is assumed to be true to explain an observation or event. The statement can be tested to determine its validity.
Experimenting	Planning and conducting an investigation to test a hypothesis, collecting and interpreting data until a conclusion can be obtained.

Manipulative Skills

In a scientific investigation, manipulative skills are psychomotor skills that enable pupils to:

- Use and handle science apparatus and substances correctly.
- Store science apparatus and substances correctly and safely.
- Clean science apparatus correctly
- Handle specimens correctly and carefully.
- Sketch specimens, apparatus and substances accurately

Relationship between Science Process Skills and Thinking Skills

The mastery of Science Process Skills requires pupils to master the relevant thinking skills.

The main thinking skills that are related to each science process skill are as the following:

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 Making Generalisations Evaluating

Defining operationally	Relating Making analogies Visualising Analysing
Controlling variables	Attributing Comparing and contrasting Relating Analysing
Making hypothesis	Attributing Relating Comparing and contrasting Generating ideas Making hypothesis Predicting Synthesising
Experimenting	All thinking skills
Communication	All thinking skills

Teaching and Learning Based on Thinking Skills and Scientific Skills

This Science Curriculum emphasises thoughtful learning based on thinking skills and scientific skills. In this curriculum, the learning standard is written by integrating acquisition of

knowledge with mastery of thinking skills and scientific skills. Thus in teaching and learning, teachers need to integrate the mastery of skills together with acquisition of knowledge and the inculcation of scientific attitudes and noble values.

Implementation of SPS in Science exclusively encompass intended skills in the 21st century, indirectly encourage and develop pupils' higher order thinking skills.

Scientific Attitudes and Noble Values

Experience in learning of science can foster positive attitudes and values in pupils. Positive attitudes and values fostered in the teaching of science in schools include scientific attitudes and noble values as the following:

- Having an interest and curiosity towards the environment;
- Being honest and accurate in recording and validating data;
- Being diligent and persevere when carrying out a task;
- Being responsible about the safety of oneself, others and the environment;
- Having critical and analytical thinking;
- Being flexible and open-minded;
- Being kind-hearted and caring;

- Being objective;
- Being systematic and ethic;
- Being cooperative;
- Being fair and just;
- Dare to try;
- Thinking rationally;
- Being confident and independent;
- Good in time management;
- Appreciating the balance of nature;
- Being respectful and well-mannered;
- Appreciating the contribution of science and technology;
- Realising that science is a means to understand nature;
- Appreciating and practising clean and healthy living; and
- Being thankful to God.

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

- Be aware and understand the importance and the need of scientific attitudes and noble values.
- Giving attention to attitudes and noble values; and
- Internalising and practising scientific attitudes and noble values.

Proper planning is required to optimize the inculcation of scientific attitudes and noble values. Teachers are encouraged to go through all learning standards related to the content standard including the learning standard about the inculcation of scientific attitudes and noble values before starting a lesson in the particular learning area.

21st CENTURY SKILLS

One of the KSSR's intentions is to produce pupils who have 21st century skills, focusing on thinking skills as well as life skills and inculcating noble values in their careers. 21st century skills aim to produce pupils who have the characteristics specified in the pupil profile as shown in Table 1 that enable them to compete globally. Acquiring the CS and LS in the Science curriculum contributes to the acquisition of 21st century skills among pupils.

Table 1: Pupils' Profile

PUPIL PROFILE	DESCRIPTION
Resilient	Able to face and overcome difficulties and challenges with wisdom, confidence, tolerance and empathy.

PUPIL PROFILE	DESCRIPTION
Communicators	Able to voice out and express their thoughts, ideas and information confidently and creatively in verbal and written, using a variety of media and technology.
Thinker	Able to think critically, creatively and innovatively; solve complex problems and make ethical decisions. Think about learning and about being learners themselves. Generate questions and are receptive towards perspective, values and individual traditions and society. Confident and creative in handling new learning areas.
Teamwork	Cooperate effectively and harmoniously with others. Share collective responsibility while respecting and appreciating the contributions of each member in the team. Acquire interpersonal skills through collaborative activities, which in turn mould them into better leaders and team members.

PUPIL PROFILE	DESCRIPTION
Curious	Develop natural curiosity to explore strategies and new ideas. Learn skills that are needed to carry out inquiry and research, as well as display independent traits learning. Enjoy continuous life-long learning experiences.
Principled	Honest and have integrity, equality, fair and respect the dignity of individuals, group and community. Responsible for their actions, consequences and decisions.
Informative	Knowledgeable and form wide understanding which is balanced across various disciplines. Explore knowledge on local and global issues effectively and efficiently. Understand ethical issues/laws related to the information gained.
Caring/ Concern	Show empathy, compassion and respect towards needs and feelings of others. Committed to serve the society and ensure sustainability of nature.

PUPIL PROFILE	DESCRIPTION
Patriotic	Portray love, support and respect towards the country.

HIGHER ORDER THINKING SKILLS

Higher Order Thinking Skills (HOTS) is explicitly stated in the curriculum to enable teachers to incorporate them in teaching and learning, hence stimulate structured and focused thinking among pupils. Description of HOTS is focused on four levels as shown in Table 2.

HOTS are the ability to apply knowledge, skills and values for reasoning and reflecting in solving problems, making decisions, innovating and creating. HOTS includes critical thinking, creative thinking, reasoning and thinking strategy.

Table 2: Thinking levels in HOTS

THINKING LEVEL	DESCRIPTION
Applying	Using knowledge, skills and values to take actions in different situations.
Analysing	Breaking down information into smaller parts to enhance understanding and make relationship between the parts.
Evaluating	Using knowledge, experience skills and values to consider, make decisions and give justifications.
Creating	Producing ideas, products or methods and innovatively.

Critical thinking skill is the ability to evaluate an idea in a logical and rational manner to make a fair consideration by using reason and reliable evidence.

Creative thinking skill is the ability to produce or create something new and valuable by using genuine imaginative skill and unconventional thinking.

Reasoning skill is the ability of an individual to consider and evaluate logically and rationally.

Thinking strategy is a way of thinking that is structured and focused to solve problems.

HOTS can be applied in classrooms through activities in the form of reasoning, inquiry learning, problem solving and projects. Teachers and pupils need to use the thinking tools such as thinking maps and mind maps, include high level questioning to encourage pupils to think.

TEACHING AND LEARNING STRATEGIES

Teaching and learning strategies in the science curriculum emphasise on thoughtful learning. Thoughtful learning is a process that acquires knowledge and master skills that will help them develop their minds to the optimum level. Thoughtful learning can take place through various learning approaches such as inquiry, constructivism, contextual learning, mastery learning and, science, technology and society. Learning activities should therefore be geared towards activate pupils' critical and creative thinking and not confined as routine method. Pupils should be aware of the explicit thinking skills and thinking strategies that are being used in their learning.

Pupils should be challenged with higher order questions and problems and be required to solve problems critically and creatively. They should be actively involved in the teaching and learning that integrate the acquisition of knowledge, mastery of skills and inculcation of scientific attitudes and noble values.

Inquiry Approach

Inquiry-discovery approach emphasises learning through experiences. Inquiry generally means to find information, to question and to investigate a phenomenon. Discovery is the main characteristic of inquiry. Learning through discovery occurs when the main concepts and principles of science are investigated and discovered by pupils themselves. Through activities such as experiments, pupils investigate a phenomenon and draw conclusions by themselves. Teachers then lead pupils 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-discovery 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 or through guided inquiry-discovery to pupils.

Constructivism

Constructivism is an ideology that suggests pupils learn by building their own understanding that is meaningful to them.

The important attributes of constructivism are:

- Teachers considered pupils' prior knowledge.
- Learning is the result from pupil's own effort.
- Learning occurs when pupils restructure their existing ideas by relating new ideas to old ones.
- Pupils have the opportunities to cooperate, share ideas and experiences and reflect on their learning.

Science, Technology and Society approach

Meaningful learning occurs if pupils can relate what they have learnt with their daily life. Meaningful learning happens to various approaches such as contextual learning and the science, technology and society (STS) approach. The theme and objective of learning that is based on STS is reflected in this standard curriculum. The STS approach recommends that the learning of science is done through investigation and discussions based on science, technology and society issues. Science and technology knowledge can be learnt together with

the application of science and technology and their implications on the society.

Meaningful learning occurs if pupils can relate their learning with their everyday experiences. Meaningful learning can take place in learning approaches such as contextual learning and Science, Technology and Society (STS). Learning themes and learning objectives that carry elements of STS are incorporated into the curriculum. STS approach suggests that science learning takes place through investigation and discussion based on science, technology and society issues. Knowledge of science and technology can be learnt with the application of science and technology and their impact on society.

Contextual Learning

Contextual learning is an approach that associates learning with pupil's everyday life. This approach involves investigative learning as in the inquiry-discovery approach. In contextual learning, the relationship between knowledge taught and everyday life is explicitly demonstrated. In this context, pupils not only learn in theory but learn to appreciate the relevance of science in their lives.

Mastery learning

Mastery learning is an approach that ensures all pupils to acquire and master the intended learning objectives. This approach is based on the principle that pupils are able to learn if given the opportunities. Pupils should be allowed to learn at their own pace, with the incorporation of remedial and enrichment activities as part of the teaching-learning process.

Inculcation of Patriotism Elements

The science curriculum strengthens and fosters patriotism among pupils. For example, in the learning of colonization and displacement processes in ecosystems, pupils will learn about the rich of biodiversity of the country, they will appreciate the diversity and uniqueness of natural resources, hence deepen their love for the country.

Emphasizing Science for Teaching and Learning Strategies

Various teaching and learning methods can increase pupils' interest in science. Science lessons that are uninteresting does not motivate pupils to learn and thus affecting their performance. The teaching and learning method determined should be based on the contents of the curriculum, pupils' abilities, repertoire of intelligences, availability of resources and infrastructure.

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

Experiment

An experiment is a method commonly used in science lessons. Pupils test hypotheses through investigations to discover specific science concepts and principles. Scientific methods are used when conducting an experiment involving thinking skills, science process skills, and manipulative skills. In general, procedures to follow when conducting an experiment as in Figure 4:

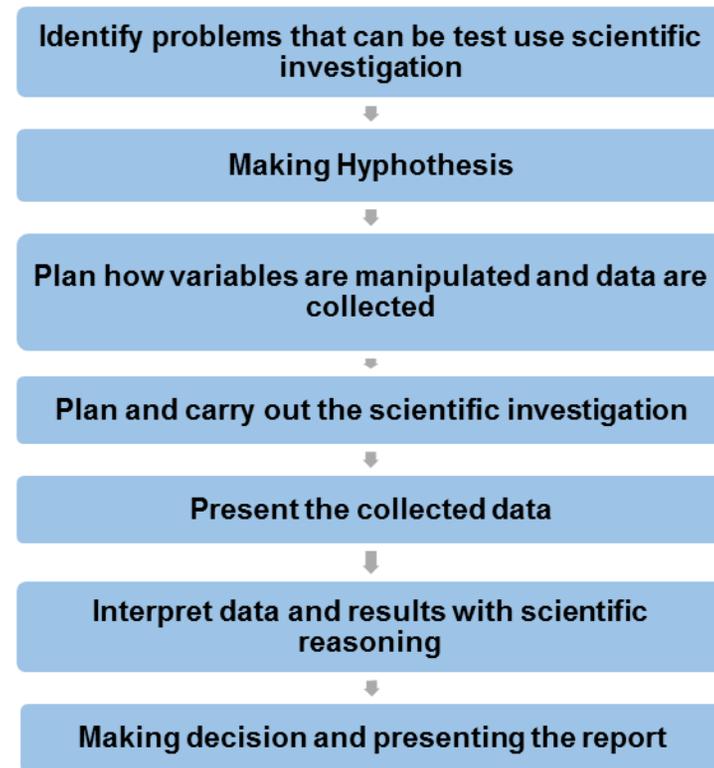


Figure 4: Steps in Carrying Out Experiments

In implementation of science curriculum, it is suggested that, besides guiding pupils to carry out experiments, pupils are given the opportunity to design experiments, which involves drafting their own experimental method, data that can be measured, how to analyse data and present the results of their experiments.

Simulation

Simulation is an activity that resembles the actual situation. Simulations can be carried out through role-play, games or use of model. In role-play, pupils act out a particular role spontaneously based on a certain pre-determined conditions. Games require procedures that need to be followed. Pupils play games in order to learn a particular principle or to understand the process of decision-making. Models are used to represent objects or real situations. Pupils will be able to visualise the real situation, thus understanding the concepts and principles learned.

Project (Collaborative Learning)

A project is an activity carried out individually or in groups to achieve a certain goal that takes a long time and exceeds formal teaching hours. Pupils are required to identify methods to solve the problem given and thus plan the entire project. The outcome of the project either in the form of a report, an artefact or in other forms needs to be presented. Projects encourage the development of problem solving skills, time management skills and self learning.

Visits and Use of External Resources

Learning science could be thought through visiting zoos, museums, science centres, research institutes, mangroves swamps and factories, and it can make learning more effective, enjoyable and meaningful. Learning through visits can be optimised by careful planning whereby pupils have to carry out or perform tasks during the visit. Discussion after the visit should be held to conclude the activities carried out.

Use of Technology

Technology is an effective tool to enhance the learning of science. Through the use of technology such as the television, radio, video, computer and internet make the teaching and learning of science more interesting and effective. Animation and computer simulation is an effective tool for learning of abstract or difficult science concepts. Animation and computer simulation can be presented in the form of software or website. Software applications such as word processors, graphic presentation software and electronic spreadsheets are valuable tools for the analysis and presentation of data. The use of other technologies such as data loggers and computerized user interface in experiments and projects can assist effective in science teaching and learning.

ELEMENTS ACROSS THE CURRICULUM

Elements Across the Curriculum (EMK) is a value-added element applied in the teaching and learning process other than those specified in the standard content. The application of these elements is aimed at strengthening the human capital skills and competency as well as intended to prepare pupils for the challenges of the present and the future. The elements are explained below:

1. Medium of instruction

- The accuracy of the medium of instruction should be a priority in all subjects.
- During the teaching and learning of each subject, emphasis is given on the aspects of pronunciation, sentence structure, grammar and the terminology of the language in order to assist pupils organise ideas as well as communicate effectively.

2. Environmental Sustainability Awareness

- Developing awareness towards the love of the environment in the pupils' lives needs to be nurtured through the teaching and learning

process in all subjects.

- Knowledge and awareness on the importance of the environment would help to shape pupils' ethics in appreciating nature.

3. Values

- Values need to be emphasised in all subjects to ensure that pupils will be aware of the importance of these good principles and therefore will practise these elements in their lives.
- Values encompass the aspects of spirituality, humanity and citizenship will be the centre core of the pupils' daily life.

4. Science and Technology

- The increase of interest in the science and technology will help to improve scientific and technological literacy amongst pupils.
- The use of technology in teaching can help and contribute to efficient and effective learning.
- The integration of science and technology in the teaching and learning process covers four areas, namely:

- i. The knowledge of science and technology (facts, principles, concepts related to science and technology);
- ii. Scientific skills (process of thought and specific manipulative skills);
- iii. Scientific attitudes (such as accuracy, honesty, security); and the use of technology in classrooms.
- iv.

5. Patriotism

- Patriotism can be nurtured through all subjects, extra-curricular activities and community services
- Patriotism develops the spirit of love for the country as well as encourages the feelings of 'truly proud to be Malaysians' amongst pupils.

6. Creativity and Innovation

- Creativity is the ability to use imagination in gathering, extracting and generating ideas or creating new or original ideas or through combination of ideas.
- Innovation is the application of creativity through the modification and practice of ideas.
- Creativity and innovation are always interconnected. Therefore, there is a need to ensure

that human capital development is able to meet the challenges of the 21st Century.

- Elements of creativity and innovation should be integrated in the teaching and learning in the classroom.

7. Entrepreneurship

- The incorporation of entrepreneurship elements aims at developing specific attributes and entrepreneurial mind-set that will become a culture amongst pupils.
- Entrepreneurial attributes can be ingrained during lessons through fostering attitude such as diligence, honesty, trustworthiness and responsibility as well as developing creative and innovative mind-set to drive ideas into the market economy.

8. Information and Communication Technology Skills (ICT)

- Information and communication technology elements are incorporated in the lessons to ensure pupils are able to apply and strengthen their basic knowledge and skills in ICT.
- The application of ICT in the lesson does not only motivate pupils to be creative but stimulates interesting and fun teaching and learning as well as improve the quality of learning.
- ICT should be integrated in the lessons based on appropriate topics to be taught to further enhance pupils' understanding of the content subject.

ASSESSMENT

Assessment or evaluation is the process of gathering information through variety of methods such as homework, presentations, projects, tests and others. Assessment is a tools to assess pupils' achievement in obtaining knowledge, skills and values beside assessing the activities carried out during teaching and learning. Assessment supports pupils' learning and provides valuable feedback to stakeholders such

as administrators, teachers, pupils and parents or guardians about pupils' progress and achievement.

The purpose of formative assessment is to monitor the pupil's learning. Therefore, it is important for teachers to design a valid, reliable and authentic assessment instruments.

Information gathered through formative assessment should assist teachers to determine pupil's strengths and weaknesses in achieving the content standard for any subject. It should assist teachers in adapting teaching and learning based on the needs and weaknesses of their pupils. Summative assessment is also to evaluate pupil's learning with the content standards for a particular subject.

Assessment in KSSR consists of four components:

- School Assessment;
- Central Assessment;
- Physical, Sports and Co-Curricular Activity Assessment;
and
- Psychometric Assessment.

Comprehensive assessment should be well planned and carried out continuously as part of the activities in classrooms. Teachers' efforts in implementing a holistic assessment assists to correct weaknesses in pupils, forming a conducive and balanced learning ecosystem.

Efforts to ensure the assessments assist pupils to increase their potentials and performances, teachers should use assessment strategies that have these following characteristics:

- various techniques;
- fair to all pupils;
- consider various cognitive levels;
- enable pupils to exhibit a variety of learning abilities; and
- consider the knowledge and skills acquired by pupils and assess the level of their understanding.

Science assessments in schools based on three main domains, which are knowledge, skills and values.

Knowledge assessment on certain themes includes the integration of science process skills, aimed in determining the level of pupils' understanding in specific content standard holistically. Performance level of pupils is divided into six levels as shown in Table 3

Table 3: General Statement to Interpret the Performance of Knowledge Level for Science Subject

PERFORMANCE LEVEL	DESCRIPTOR
1	Recall the basic knowledge and skills in science.
2	Understand the science knowledge and skills as well as explain their understanding.
3	Apply science knowledge and skills to perform simple task.
4	Analyze science knowledge and skills in the context of problem solving .
5	Evaluate the science knowledge and skills in the context of problem solving and making decision to perform a task.
6	Inventing by using science knowledge and skills in the context of problem solving and making decision or in performing the tasks in a new situation creatively and innovatively.

Assessment of Content Standards for each cluster can be carried out using the Performance Standard as a teachers' reference scale to determine pupils' achievement in mastering a particular Content Standard. Performance Standard shows six Performance Levels which are hierarchically arranged in Level 1 representing the lowest, to the highest attainment of Level 6. The assessment made should integrate contents, skills and values to determine pupils' acquisition of the Content Standard holistically.

Assessment of Scientific Attitudes and noble values for primary school science are made in reference to Table 4;

Table 4: Interpretation of Performance Levels for Scientific Attitude and Noble Values

PERFORMANCE LEVEL	DESCRIPTOR
1	Interest
2	Interest and curious
3	Interests, curious, honest and accurate in recording data
4	Interest, curious, honest and accurate in

	recording data, dare to try and systematic
5	Interest, curious, honest and accurate in recording data, dare to try, systematic, cooperates, diligent and perseverance in completing task
6	Interest, curious, honest and accurate in recording data, dare to try, systematic, cooperates, diligent and perseverance in completing task, responsible for oneself, friends, environment and courteous.

School assessment made should refer to the Performance Standard provided. The level of performance obtained by pupils must be recorded in the assessment form.

Overall Performance Level

The overall performance level must be determined in order to provide a value to the pupils' performance levels at the end of the school session. The overall performance level includes the content, scientific skills, scientific attitudes and values. Therefore, teachers should assess pupils collectively and holistically on all aspects of the pupils' learning process on an ongoing basis through various methods such as their achievement a topical test, observations, training, presentation, pupils' verbal responses and group projects. Teachers are able to provide their professional judgment through their experience with pupils, their wisdom and discussions with colleagues in order to give an overview of their pupils performance levels.

CONTENT ORGANISATION

The Science Curriculum Standard for Primary Schools focuses on the achievement of knowledge, skills and values that correspond to the pupil's abilities based on Content Standards, Learning Standards and Performance Standards that are arranged in three columns as shown in Table 5.

Table 5: Organization of the DSKP

CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD
Specific statements about what pupils should know and can do during the schooling period encompassing the knowledge, skills and values.	A predetermined criteria or indicator of the quality in learning and achievement that can be measured for each content standard.	A set of general criteria which reflects the levels of pupils' achievement that they should display as a sign that certain topic has been mastered by pupils.

Science Curriculum Standard for Year 1 to Year 6 are arranged thematically in the learning field of Inquiry in Science, Life Science, Physical Science, Material Science, Earth and Space, and Technology and Sustainability of Life.

The Science Level 1 scope for skills shown in Table 6 and the scope for contents shown in Table 7:

Table 6: Science Process Skills

SKILLS	SCOPE
Observing	Describe the usage of body parts and all senses to make observation of phenomenon or changes that takes place.
Classifying	Describe the characteristics of an object by specifying the similarities and differences.
Measuring and Using Numbers	Measure with the tools and suitable standard units.
Making Inference	State a reasonable explanation for the observations.
Predicting	Describe the probability of a situation or data.
Communicating	Recording information or ideas in certain form.

Table 7: Content Science Level 1

THEME	SCOPE
Inquiry in Science	Observing, classifying, measuring and using numbers, making inference, predicting, communicating, manipulative skills and rules of the science room
Life Science	Living and non-living things Human: senses, life processes, food classes. Animals: parts of body, life processes, eating habits, classes of animal Plants: parts, life processes
Physical Science	Magnets, electrical circuits, float and sink, sounds, volume, mass, time
Materials Science	Ability of materials to absorb water, solubility, chemical properties
Earth and Space	Surfaces of the Earth, soils, water, air
Technology and Sustainability of Life	Basic of building, assemble a models according to the manual, technology development

Teaching and learning should be planned holistically to achieve several Learning Standards, depending on the suitability and learning needs. Teachers should scrutinize all Learning Standards and Performance Standards within a cluster concerned prior to planning teaching and learning activities.

Activities can be varied to achieve the Learning Standards to meet the learning needs, based on the pupils' abilities and learning styles. Teachers are encouraged to plan activities that engage pupils actively in order to generate analytical, critical, innovative and creative thinking, while using technology as a medium for achieving the Learning Standards more effectively. Implementation of teaching and learning that requires appropriate activities, investigations and experiments to achieve learning standards, should be carried out to strengthen pupils' understanding.

INQUIRY IN SCIENCE

1. SCIENTIFIC SKILLS				
CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
1.1 Science Process Skills	Pupils are able to: 1.1.1 Observe	1	State all the senses involved in making the observations on the phenomena that occur.	Teacher conducts activities that could lead to the implementation and assessment of observing skills.
		2	Describe all the senses used in making the observations on the phenomena or changes that occur.	
		3	Use all the senses involved in making the observations on the phenomena or changes that occur.	
		4	(i) Use all the senses involved in making qualitative observations to explain the phenomena or changes that occur. (ii) Using the appropriate tools if necessary to help the observation.	

CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
		5	(i) Use all the senses involved in making qualitative and quantitative observations to explain the phenomena or changes that occur. (ii) Using the appropriate tools if necessary to help the observation.	
		6	(i) Use all the senses involved in making qualitative and quantitative observations to explain phenomena or changes that occur systematically. (ii) Using the appropriate tools if necessary to help the observation.	

CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
	Pupils are able to: 1.1.2 Communicate	1	State the information gained.	Teacher conducts activities that could lead to the implementation and assessment of communication skills.
		2	Record information or ideas in any forms.	
		3	Record information or ideas in suitable form.	
		4	Record information or ideas in suitable form and present it systematically.	
		5	Record information or ideas in more than one suitable form and present it systematically.	

CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
		6	Record information or ideas in more than one suitable form and present it systematically, creatively and innovatively and able to provide feedback.	

CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
1.2 Manipulative Skills	Pupils are able to:	1	List the apparatus, science substances and specimens required for an activity.	Teacher carries out assessment during pupils' learning activities.
	1.2.1 Use and handle science apparatus and substances correctly.			
	1.2.2 Handle specimens correctly and carefully.			
	1.2.3 Sketch specimens, apparatus and science substances correctly.			
	1.2.4 Clean science apparatus correctly.			
1.2.5 Store science apparatus and substances correctly and safely.	2	Describe the use of apparatus, science substances and specimens required for an activity with the correct method.		
		3	Handling apparatus, science substances and specimens required for an activity with the correct method.	
		4	Using, handling, sketching, cleaning and storing the apparatus, science substances and specimens used in an activity with the correct method.	

CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
		5	Using, handling, sketching, cleaning and storing the apparatus, science substances and specimens used in an activity with the correct methods, systematically and sparingly.	
		6	Using, handling, sketching, cleaning and storing the apparatus, science substances and specimens used in an activity with the correct methods, systematically, sparingly and be an example to others.	

2. SCIENCE ROOM RULES				
CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
2.1 Science room rules	Pupils are able to: 2.1.1 Adhere to science room rules	1	State one of the science room rules.	Teacher can assess by observations during the learning activities.
		2	State more than one of the science room rules.	
		3	Apply one of the science room rules.	
		4	Apply more than one of the science room rules.	
		5	Give reasons the needs to adhere the science room rules.	

CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
		6	Be an example to peer in adhering to science room rules.	

LIFE SCIENCE

3. LIVING THINGS AND NON-LIVING THINGS				
CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
3.1 Living things and non-living things	Pupils are able to: 3.1.1 Compare and contrast living things and non-living things based on the following characteristics: (i) breathe; (ii) need food and water; (iii) move; (iv) grow; and (v) reproduce. 3.1.2 Arrange in sequence the examples of living things based on their sizes.	1	Give examples of living things and non-living things.	Teacher brings pupils to identify objects within school surroundings. Pupils discuss and conclude that human, animals and plants are living things. Note: There are non-living things that have the characteristics of living things. e.g.: (i) moving objects such as a fan and a car; and (ii) the object that becomes bigger such as a blown balloon.
		2	Compare and contrast living things and non-living things.	
		3	Describe the basic needs of living things for human, animals and plants.	
		4	Arrange in sequence the examples of living things based on their sizes.	
		5	Provide reasoning for the importance of food, water, air and shelter to human and animals.	

CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
3.2 Basic needs of living things	<p>Pupils are able to:</p> <p>3.2.1 State the basic needs of living things i.e. food, water and air.</p> <p>3.2.2 Describe human, animals and plants need food, water and air in different ways.</p> <p>3.2.3 Describe human and animals also need shelters.</p> <p>3.2.4 Provide reasoning on the importance of food, water, air and shelter to human and animals.</p> <p>3.2.5 Explain observations on characteristics and basic needs of living things using sketches, ICT, writing or verbally.</p>	6	Communicate to show that human, animals and plants have different ways to obtain food, water and air.	Pupils arrange the examples of living things from a small to a larger size such as elephants and germs, then communicate about the arrangements made.

4. HUMAN				
CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
4.1 Human senses	Pupils are able to:	1	State the parts of human body.	Discuss with pupils the function of each part of the body.
	4.1.1 Identify parts of human body which related to senses.	2	Relate the parts of human body with it senses.	
	4.1.2 Classify the objects according to identified characteristic.	3	Describe the characteristic of objects using senses.	Touch to compare the surface, see to differentiate colours, smell to detect odours which possibly a sign of danger e.g. smell of fire.
	4.1.3 Use senses to identify objects through investigation.	4	Classify the object given according to chosen characteristic	
	4.1.4 Explain with examples, use other senses if one of the senses is not functioning.	5	Identify the objects given if one of the senses is not functioning.	
	4.1.5 Explain observations about human senses using sketches, ICT, writing or verbally.	6	Communicating about the tools that can help sensory organs when it is not functioning properly.	Pupils carry out activities to identify objects e.g. objects in a black box.

5. ANIMALS				
CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
5.1 Parts of animals.	Pupils are able to:	1	Give example of animals.	Pupils identify the parts of animals such as: (i) rabbit; (ii) crocodile; (iii) frog; (iv) fish; (v) snail; (vi) duck; (vii) flies; (viii) rhinoceros; and (ix) worm. Pupils use an example of animal and identify its parts. Teacher carries out discussions to trigger pupils ideas on how humans play their roles in preventing mistreated animals which it may lead to injury to parts of animals.
	5.1.1 Identify the parts of animals e.g. beak, scales, fins, fine hair, feathers, horn, feelers, hard skin, shell, wings, head, body, tail and webbed feet.	2	Describe parts of animals.	
	5.1.2 Relate the parts of animals with their importance.	3	Relate the importance of animal parts to themselves	
	5.1.3 Explain through examples the parts of animals.	4	Explain through examples the parts of animals.	
	5.1.4 Make generalisation that different animals may have same parts of the body.	5	Make generalisation that different animals may have same parts of the body.	
	5.1.5 Explain observations about parts of animals using sketches, ICT, writing or verbally.	6	Communicate how humans play their roles in preventing mistreated animals which it may lead to injury to parts of animals.	

6. PLANTS				
CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
6.1 Parts of plants.	Pupils are able to: 6.1.1 Compare and contrast parts of plant i.e.: (i) leaf: types of vein; (ii) flower: flowering, non-flowering; (iii) stem: woody, non-woody; and (iv) root: tap root, fibre root. 6.1.2 Relate the parts of plants i.e. leaf, flower, stem and root with its importance to the plant. 6.1.3 Make generalisation that different plants may have same parts. 6.1.4 Explain observations about parts of plants using sketches, ICT, writing or verbally.	1	State the parts of plants.	Pupils are given / shown actual plants for the activities. Pupils give examples of flowering plants and non-flowering plants i.e. hibiscus, mushrooms, ferns and orchids. Pupils classify plant based on its characteristic i.e. the types of veins, flowers, stems or roots learnt. Pupils may use lallang and balsam plant to show the differences in parts of plants.
		2	Identify parts of actual chosen plant.	
		3	State the importance parts of plants to itself.	
		4	Classify plants according to chosen characteristic.	
		5	Make generalisation that different plants may have same parts.	

CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
		6	Communicate to differentiate types of veins of the leaf, flowering or non-flowering, type of stem and type of root between two plants.	

PHYSICAL SCIENCE

7. MAGNET				
CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
7.1 Magnet	Pupils are able to:			<p>Pupils are encouraged to bring various tools that use magnets such as magnetic pencil boxes, fridge magnets and magnetic toys.</p> <p>Pupils conduct investigations by placing magnet near to the object and observe whether the objects are attracted or not.</p> <p>Pupils conduct a fair test to investigate the strength of magnets in terms of distance and the number of paper clips that are attracted, the shape and size of the magnets must be constant.</p>
	7.1.1 Give examples the usage of magnets in daily life.	1	Give examples of objects or tools that use magnet.	
	7.1.2 Identify the shapes of magnets e.g. bar, cylinder, horseshoe, U-shaped, button and ring.	2	Identify various types of magnets.	
	7.1.3 Make generalisation on reactions of magnets to various objects by carrying out activities.	3	Make generalisation on reactions of magnets to various objects.	
	7.1.4 Conclude that magnet attracts or repels between two poles through investigation.	4	Make generalisation that magnet attracts or repels between two poles.	
	7.1.5 Determine the strengths of magnet towards object through investigation.	5	Conclude the strengths of magnets based on investigation done.	

CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
	7.1.6 Explain observations about magnets using sketches, ICT, writing or verbally.	6	Design a game or a tool using magnets.	Pupils can design simple games such as nail racing using magnets without touch the nail.

MATERIAL SCIENCE

8. ABSORPTION				
CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
8.1 The ability of materials to absorb water	Pupils are able to:	1	State the objects that absorb water and cannot absorb water.	Pupils classify objects that absorb water and cannot absorb water for example: (i) handkerchief; (ii) tissue paper; (iii) paper clips; (iv) marbles; (v) bottle cap; (vi) paper; and (vii) mop. Pupils are able to determine the ability of objects to absorb water based on type of material by collecting the volume of water absorbed by the objects. The size of the object used must be constant.
	8.1.1 Identify the objects that absorb water and cannot absorb water through investigation.	2	List the importance of objects that absorb water and cannot absorb water in daily life.	
	8.1.2 Classify objects that absorb water and cannot absorb water.	3	Classify objects that absorb water and cannot absorb water.	
	8.1.3 Describe the ability of objects to absorb water based on types of materials through investigation.	4	Provide reasoning on the importance of materials that do not absorb water in daily life.	
	8.1.4 State the importance of objects that absorb water and cannot absorb water in daily life.			

CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
	8.1.5 Design an object based on the ability to absorb water.	5	Arrange in sequence the ability of objects to absorb water based on types of materials.	Note: Sponge is made from plastic which is cannot absorb water.
	8.1.6 Explain observations about the ability of materials to absorb water using sketches, ICT, writing or verbally.	6	Solving problem by applying the knowledge on the ability of objects that absorb water.	

EARTH AND SPACE

9. EARTH				
CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
9.1 Surface of the Earth	Pupils are able to: 9.1.1 State the surface of the Earth e.g. mountain, beach, hill, valley, river, pond, lake and sea.	1	State the surface of the Earth.	Pupils discuss about the surface of the Earth by observing the Earth model. Pupils mix the sample of soil with water, shake it and let a moment to see the contents of soil e.g. twigs, leaves, stones, sand and small animals.
		2	Give examples of types of soils.	
9.2 Soil	Pupils are able to: 9.2.1 State the types of soils e.g. garden soil, clay and sand. 9.2.2 Compare and contrast the contents of different types of soils through investigation. 9.2.3 Explain observation about the surface of the Earth and soil using sketches, ICT, writing or verbally.	3	Identify the contents one type of soil through observation.	Pupils compare and contrast the contents of soil for at least two different types of soils such as garden soil and sand.
		4	Compare and contrast the contents of example given soil.	
		5	Record the contents of different types of soils.	
		6	Communicate to predicts the use of soil and explain it based on the knowledge of the soil contents.	

TECHNOLOGY AND SUSTAINABILITY OF LIFE

10. BASIC OF BUILDING				
CONTENT STANDARD	LEARNING STANDARD	PERFORMANCE STANDARD		NOTES
		PERFORMANCE LEVEL	DESCRIPTOR	
10.1 Construction of basic shape blocks	Pupils are able to:	1	State the basic shapes i.e. triangle, square, rectangle and circle.	Note: Basic shape blocks can be build using manila cards or boxes.
	10.1.1 Identify the basic shapes i.e. triangle, square, rectangle and circle.	2	Identify the blocks i.e. cube, cuboid, pyramid, prism, cone, cylinder and sphere.	
	10.1.2 Identify the basic shape blocks i.e. cube, cuboid, pyramid, prism, cone, cylinder and sphere.	3	Sketch the basic shape blocks.	
	10.1.3 Design an object or structure using basic shape blocks.	4	Design an object or structure using basic shapes and blocks.	
	10.1.4 Provide reasoning on the importance of different types of blocks shape.	5	Communicate to explain the built object or structure.	
	10.1.5 Explain observations about the object built using sketches, ICT, writing or verbally.	6	Provide reasoning on the importance of various types of blocks in daily life.	

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