Working Scientifically

Infants	First and Second	Third and Fourth	Fifth and Sixth
Questioning	Questioning	Questioning	Questioning
Ask questions about animals and plants, familiar objects and events in the immediate environment	Ask questions about animals and plants, familiar objects and events in the immediate environment	Ask questions about animals, plants, familiar objects and events in the immediate environment and their relationships	Ask questions about animals, plants, objects and events in the immediate environment and their relationships
	Ask questions that may lead to investigations	Ask questions that will identify problems to be solved	Ask questions that will identify problems to be solved
		Ask questions that will help in drawing conclusions and interpreting information	Ask questions that will help in drawing conclusions and interpreting information
Observing	Observing	Observing	Observing
Use the senses to observe animals, plants , objects and events in the immediate environment	Use all the senses, separately or in combination, to explore living things, objects and events in the immediate environment	Observe and describe natural and human elements and processes in the immediate environment	Observe, describe and discuss physical, natural and human elements and processes in the immediate environment
			Distinguish between the significant and less significant observations
Observe characteristics such as the shape, size, colour, pattern, texture, sound and smell of familiar things in the local environment	Observe gradual changes in living things and familiar objects and events over a period	Observe and describe characteristics such as the shape, size, colour, pattern, texture, and interrelationships of elements in the local environment	Recognise and describe pattern and sequences in observations
Observe differences and similarities	Observe differences and similarities in the environment		
	Observe accurately both inside and outside the classroom		

Predicting	Predicting	Predicting	Predicting
Guess and suggest what will happen next in structured situations	Suggest outcomes of an investigation based on observations	Offer suggestions (hypotheses) based on observations about the likely results of the investigation	Offer suggestions (hypotheses) based on a number of observations and data available about the likely results of an investigation
			Make inferences based on suggestions and observations
			Propose ideas or simple theories that may be tested by experimentation
Investigating and experimenting	Investigating and experimenting	Investigating and experimenting	Investigating and experimenting
Carry out simple investigations set by the teacher, make observations and collect data	Carry out simple investigations where the problem, materials and method are set by the teacher Begin to suggest approaches and methods of solving problems	Collect information and data from a variety of sources, including observations in the environment, classroom observations and experiments, photographs, books, maps and ICT	Collect information and data from a variety of sources, including observations in the environment, classroom observations and experiments, photographs, books, maps, CD ROM and computer databases
		Design, plan and carry out simple investigations	Design, plan and carry out simple experiments, having regard to one or two variables and their control and the need to sequence tasks and tests
	Begin to identify one or two variables with guidance from the teacher	Identify one or two obvious variables relevant to the investigation	
		Realise that an experiment is unfair if relevant variables are not controlled	Realise that an experiment is unfair if relevant variables are not controlled
			Appreciate the importance of repeating tests and experiments

			Identify (with guidance) different ways of looking at a problem and compare results of different investigations
Estimating and measuring	Estimating and measuring	Estimating and measuring	Estimating and measuring
Describe mass and length using non-standard units and informal language	Appreciate the need for standard units	Measure , compare and record mass, weight, capacity, time and temperature using appropriate standard units of measurement and simple equipment	Use appropriate simple instruments and techniques to collect and record data on length, weight, mass, capacity , time and temperature
Compare and estimate	Begin to use simple methods to estimate , measure and compare observations		Estimate and use appropriate standard units of measurement
			Decide what should be measured and the degree of accuracy required
Match objects of equal length	Compare and identify differences in measurement		
Analysing	Analysing	Analysing	Analysing
Sort and group objects according to observable features	Sort and group objects according to observable features	Sort and group data on people, events and natural phenomena using a range of appropriate criteria	Sort and group data on people, events, natural phenomena, materials and physical processes using a range of appropriate criteria
	Appreciate that there are different criteria for sorting and suggest more than one way of sorting a number of items	Sort and present data in sets and subsets	Sort and present data in sets and subsets
	Begin to look for and recognise patterns and relationships in observations	Look for and recognise relationships when making observations	Look for and recognise relationships when making observations

		Select appropriate observations that fit a pattern	Identify other instances that fit a pattern
			Use observed patterns to make predictions
	Draw conclusions from simple investigations	Interpret information and offer explanations	Interpret information and offer explanations
		Draw conclusions from suitable aspects of the evidence collected	Draw conclusions from suitable aspects of the evidence collected
Recording and communicating	Recording and communicating	Recording and communicating	Recording and communicating and evaluating
Describe his/her observations orally using an increasing vocabulary	Describe and discuss observations orally using an increasing vocabulary	Record and present findings and conclusions using a variety of methods	Record and present findings and conclusions using a variety of methods
Represent findings pictorially and in other media	Represent findings using pictures, models and other methods		Review the methods used in investigations and assess their usefulness

Designing and making

Infants	First and Second	Third and Fourth	Fifth and Sixth
Exploring	Exploring	Exploring	Exploring
Handle and manipulate a range of materials in structured and unstructured situations	Handle and manipulate a range of materials and objects	Explore a wide range of everyday objects and how they work	Explore a wide range of everyday objects and how they work
			Explore how some objects might be improved or adapted
Observe ,investigate and describe familiar objects	Observe, investigate and describe familiar objects	Explore freely how arrange of shapes, objects, and other constructions could be made using a variety of materials	Explore freely how arrange of shapes, objects, and other constructions could be made using a variety of materials
	Recognise that people like certain characteristics of objects but not others and investigate the reasons for these preferences	Recognise that people like certain characteristics of objects but not others and investigate the reasons for these preferences	Recognise that people like certain characteristics of objects but not others and investigate the reasons for these preferences
Planning	Planning	Planning	Planning
Imagine and suggest a possible object to be made	Identify a need for new or revised designs; imagine and suggest a possible object to be made	Recognise a need to adapt or change an object or surroundings	Use knowledge and the result of investigations to identify needs and/or opportunities to improve an object or environments in familiar contexts
			Understand that while the change may be desirable it may result in problems
			Organise work taking account of constraints and resources
	Discuss, using appropriate vocabulary, what he/she would like to design or make	Become aware that new designs may create an interest and perceived need among others	

Choose appropriate materials from a given limited range	Choose materials, from a given range, to comply with the design idea		Develop the ability to draw designs showing different perspectives of proposed objects
	Clarify and communicate through pictures or simple modeling, the materials and structures required to build the object	Communicate and evaluate the design plan using sketches, models and ICT	Communicate design plan using sketches, models and other media including ICT
			Present design proposal on a “design sheet”
Talk about the plan and communicate it to others	Talk about and communicate a plan of action using appropriate vocabulary	Work collaboratively to create a design proposal	Evaluate the feasibility of the design proposal and possible modifications to it, bearing in mind the resources available
Making	Making	Making	Making
Make simple objects	Make simple objects	Make a range of simple objects to solve practical problems, to fulfill a need or preference and to express creative ideas	Make objects applying knowledge that structures have form and stability and that materials can be linked to allow maximum stability
			Identify problems with , or undesirable effects of, a design during construction: propose and implement alterations as the object is made
Develop craft-handling skills and techniques needed to carry out the plan	Develop craft-handling skills	Develop craft-handling skills and techniques	Develop craft-handling skills and techniques
Use a range of tools	Use a range of tools	Use appropriate tools	Use a range of tools
Use a range of materials	Use a range of materials	Use a range of materials	Use a range of materials

	Understand that these materials can be linked in simple ways to allow movement		
Evaluating	Evaluating	Evaluating	Evaluating
Talk about own work during design and making tasks	Evaluate design ideas as these develop in the making process	Recognise that modifications to the plan may have to be made throughout the task	Discuss stability and form of other made objects and evaluate the effectiveness of the group product in the light of this investigation
Report to others on what has been done	Evaluate own work and suggest possible modifications to the designing and making task	Evaluate the effectiveness of the new product and suggest modifications to the designing and making task	Discuss and justify modifications that would improve the overall quality and stability of the outcome
			Justify the ideas, materials, joins, procedures and techniques used and indicate possible improvements
Discuss the work of peers in a positive way	Evaluate the work of peers and propose positive modifications	Evaluate the work of peers and propose positive modifications	Appraise results against group's initial plan and intention
			Evaluate the positive and negative impact of design on surroundings and others