

THIRD AND FOURTH – SCIENCE AND THE ENVIRONMENT

Teacher Guidelines:

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Linkage:

- Living things: Plants and animals
- Environmental awareness
- Materials: properties and characteristics

Integration:

- Language development – English and Gaeilge
- Visual Arts
- Mathematics
- History
- Geography

Content Objective:

BEGIN TO EXPLORE AND APPRECIATE THE APPLICATION OF SCIENCE AND TECHNOLOGY IN FAMILIAR CONTEXTS.

at home: cooking, heating, vacuum cleaners, refrigerators, washing machines, toasters, at school: design of computer desks, chairs, pens, calculators, in shops: design of trolleys, use of conveyor belts in counters, ways of preserving foods, packaging foods, in designing and making activities

Some suggested activities:

- Investigate carving and toasting which offer many opportunities to consider the contribution of science and technology, including: electric kettle, electric carving knife, toaster, non-stick pans, dishwasher, telephones.
- Explore hobbies/pastimes e.g. angling, computer games, TV/video and DVD/hi-fi systems.
- Discuss/compare with older people some of the items seen and used on a daily basis and how they have changed, e.g. blackboard, chalk/whiteboard, marker/overhead projector; central heating/radiators/electric or gas fire/open fire; blinds/curtains/shutters/bare windows; workbooks/workcards, homemade or photocopied; copybooks/loose leaf binder/slate and chalk; calculator

- Discuss shopping: Door-to-door delivery of milk by farmer/bottled milk/modern milk cartons; corner shop *vis a vis* supermarket/self-service; baskets/trolleys/trolleys with coin deposit; fresh meat butchering/pre- packaged meat; meat slicers; tailoring/off the peg clothing/mass production of clothing; floor cleaning/mopping/electric cleaners and polishers; bread packaging/slicing. Cardboard boxes/plastic bags/personal shopping bag or basket/paper bags might be discussed and compared.

Content Objective:

IDENTIFY SOME WAYS IN WHICH SCIENCE AND TECHNOLOGY CONTRIBUTE POSITIVELY TO SOCIETY

Transport, buildings, bridges, roads, information and communication technologies, insulation of houses, tools and appliances, toys, farming, medicine

Some suggested activities:

- Explore transport: wheelbarrow, bus, JCB, forklift, crane, flight including Concorde, helicopter etc. trains, underground trains, trams, cars, bicycles, motorcycles, ferries, escalator, conveyor belt, lift. Links with health, exercise, safety, war?
- Explore buildings: Size, height, materials used; heating/insulation; prefabricated sections; speed of building; high-rise accommodation; interiors/lighting/use of space/furnishings; how the work of tradespeople has changed; concrete mixed by hand/mixer/readymix; draught proofing, insulation, solar power, art pieces used to enhance visual environment internally and externally;
- Explore bridges: progression through history; design types; materials used; maintenance; viaducts and aqueducts; welding; draw bridge/modern bridge lifts; canal locks/purpose and design.
- Explore roads through the ages: design, surfaces, road building/maintenance/resurfacing; motorways, ring roads; tolls; links with road safety; road lining; traffic management, traffic lights, cats' eyes; level crossings; pedestrian crossing/Belisha beacon/modern version; links with re-use of glass in tarmac.
- Explore tools and appliances: The possibilities here are very wide due to the variety of items at home, in school, on farms, in sport/pastimes, in shops, factories, workshops etc. Cutlery, can openers, corkscrew, nutcracker, pressure cooker, whisk/manual "cream whipper"/electric whisk, juicers, blenders and processors, coffee maker/percolator; teapot, saucepans, frying pans, electric blanket, radio, clocks; shoemaker, hair dryer, curling tongs, tooth brush, drill, sander, spray painter, cameras etc.; ploughing, seeding, weeding/spraying, fertilizer, harvesting, storage of crops.
- Explore medicine: The work of a dentist or surgeon might be traced over time.

Dressings/sutures; sterilisation of instruments, vaccination, x-rays, implants, transplants, keyhole surgery, plastic surgery, mass production of medicines, orthodontics, prostheses etc. all at a level to suit the pupils' stage of development, might be included. Mass production of medicines, antibiotics, tablets etc. use of machinery, forklifts, weighing apparatus, calibration, sterile conditions etc. Shopping, farming, games, hobbies, trades, nutrition, art and crafts, manufacture and social life generally will yield many more possibilities for exploring, discussing, comparing and appreciating the contribution of science to our lives.

Content Objective:**RECOGNISE AND INVESTIGATE HUMAN ACTIVITIES WHICH HAVE POSITIVE OR ADVERSE EFFECTS ON LOCAL OR WIDER ENVIRONMENTS**

enhance the built environment, protect flora and fauna, e.g. by creating and maintaining a school garden, produce biodegradable and non-biodegradable waste affect the quality of air, water and soil

Some suggested activities:

- Explore street furnishings, graffiti, vandalism, street cleaning, shop fronts, noise pollution, litter, waste, packaging, Tidy Towns Competition, street art/drama/parades, annual cleanups, oil spills, landfills, turf harvesting, over fishing, cattle farming (methane production), planning controls, An Taisce, closed seasons for fishing and shooting, control of pets.
- Create a wildlife garden at school including habitats for minibeasts.
- Sort waste at home and school into re-usable, recyclable, compostable and items for landfill.
- Develop a composter; consider worm composting.
- Research waste management in your county; what companies are in the locality and what items do they gather?

Some suggested investigations:

- Toasting bread by various means might be investigated.
- Carving meat
- How we keep food cool or hot
- Conduct litter or waste survey
- Survey of recyclables at home and school
- Use timer to measure traffic light cycles
- Clocks: making an accurate pendulum to time one minute: investigate length of string and weights and angle of swing
- Whipping cream by various means

- Crack nuts in various ways
- Visit to building site to observe (at a safe distance) machines at work: discussion of how machines reduce time and persons required.

Some suggested designing and making:

- Bird boxes
- Water filter