

Contents: Opinion survey concerning the feasibility and desirability of a number of suggested scientific and technological developments.

Time: 1 period (more if follow-up work is undertaken).

Intended use: Could be used in conjunction with a range of scientific and general courses. May be particularly appropriate for use at the end of a course of study which has included a number of SATIS units.

Aims:

- To help students assess their own awareness and knowledge of developments in science and technology
- To increase awareness of the power and limitations of science and technology for solving problems
- To develop awareness that scientific and technological innovations can have both beneficial and detrimental results for society
- To encourage students to express their opinions, and listen to the opinions of others.

Requirements Students' worksheets No.1010

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Suggested use

There are several ways to use the unit. One possibility might be:

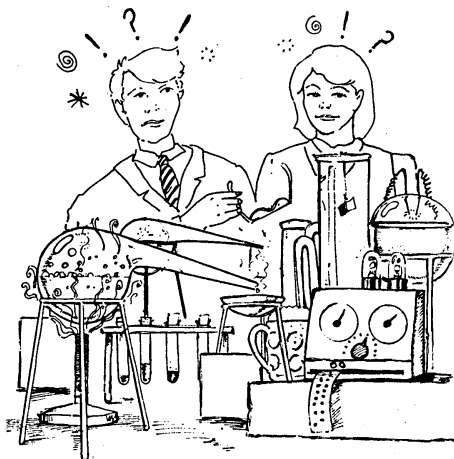
- 1 Introduce the unit and explain the activity
- 2 Give each student the list of suggestions and an answer grid
- 3 Get them to complete the answer grid, working individually
- 4 After completion, ask them to compare their answers with other students, working in small groups and discussing any differences.
- 5 Finally, have a plenary discussion involving the whole class and focusing on any especially controversial points.

Students need not work through **all** the suggestions. The teacher could choose a selection for them to do. It may help to take the suggestions in batches, working on a small number at a time.

Further activities

- 1 The list of suggestions can be extended (or completely replaced) by the teacher's own suggestions, or those of students.
- 2 The responses could be analysed by groups, to examine whether they vary significantly, for example:
 - (a) between boys and girls
 - (b) between age groups
 - (c) between teachers and students
 - (d) according to subject options (for example, whether students have opted to study science subjects)

CAN IT BE DONE? SHOULD IT BE DONE?



Science and technology can solve many of our problems, but not all of them. Sometimes we make a scientific or technological discovery, then decide we would have been better off without it.

In this unit you will look at a number of suggested scientific or technological developments. For each one, give your opinion on each of the following:

A Is it possible?

Is the suggestion:

- 1 possible in everyday life
- 2 possible in the laboratory
- 3 possible in theory
- 4 impossible

B How sure are you of your answer to A?

Are you:

- 1 certain
- 2 fairly sure
- 3 unsure
- 4 blind guess

C Is it desirable?

Do you believe:

- 1 this suggestion should be put into practice
- 2 it depends on the balance of advantages and disadvantages
- 3 this suggestion should not be put into practice

(If you have decided the suggestion is impossible, leave C unanswered.)

Put your responses to the suggestions on the answer grid provided.

When you have finished, compare your responses with those of other students. Discuss any differences.

Here is the list of suggestions. Can these things be done? Should they be done?

- 1 Making food from waste plastic
- 2 Making electricity directly from sunlight
- 3 Using non-pedigree cows to produce pedigree calves
- 4 Powering a car by sunlight
- 5 Producing a chemical which allows you to drink as much as you like without getting a hangover

- 6 Producing a chemical which stops the police detecting alcohol on your breath
- 7 Using radiation to sterilize food to stop it going off
- 8 Freezing a person's body so they can be kept alive in cold storage
- 9 Making an artificial heart
- 10 Making a medicine that will cure all forms of cancer

- 11 Making a car engine that will use water as a fuel
- 12 Heating homes using waste heat from power stations
- 13 Replacing all Britain's nuclear power stations by tidal power stations
- 14 Putting a chemical into the drinking water that will stop people wanting to smoke cigarettes
- 15 Recycling 80 per cent of all glass containers

- 16 Recycling 90 per cent of all the aluminium we use
- 17 Producing a completely safe insecticide
- 18 Making a synthetic fibre that has exactly the same properties as wool
- 19 Making artificial eyes for blind people
- 20 Building a bridge between Britain and America

- 21 Building a car in which you could survive a head-on collision at 100 mph
- 22 Replacing doctors with computers
- 23 Extracting minerals without causing damage to the environment
- 24 Producing a chemical which could be added to sweets so they do not cause tooth decay
- 25 Building a defensive system which would destroy all incoming nuclear weapons before they could hit Britain

- 26 Running a car factory with no humans at all, just robots
- 27 Feeding the world's population on plant products alone, using no food produced by animals
- 28 Making a refrigerator that will work where there is no electricity
- 29 Using bacteria to get metals from ores
- 30 Growing bananas on a large scale in Britain

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- 31 Making a medicine that stops people feeling depressed, without any side-effects
 - 32 Predicting when a volcano will erupt
 - 33 Cutting down people's average dose of low-level radiation by half
 - 34 Providing mains household electricity without any danger of electrocution
 - 35 Finding a cure for AIDS

 - 36 Preventing acid rain
 - 37 Disposing of nuclear waste in space
 - 38 Choosing the sex of a baby
 - 39 Performing a brain transplant operation
 - 40 Treating the waste from chemical factories to remove all poisonous chemicals
 - 41 Making computers which are more intelligent than humans
 - 42 Using nuclear fusion to produce practically unlimited energy supplies

Index

This index includes, in a single list, references to science syllabus topics (eg acceleration, acids), to social and technological topics (eg advertising, agriculture) and to types of activity (eg data analysis, discussion).

Entries give unit and page numbers (eg 801/1). A list of unit titles can be found at the front of this book.

Where the reference is to the whole unit, the number is given in italics (eg 901).

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SATIS 10 and Index

List of units in this book

1001 CHOCOLATE CHIP MINING

A practical, problem-solving activity linked to analysis of data about copper mining.

1002 QUINTONAL — AN INDUSTRIAL HAZARD

A simulation role-play exercise concerning industrial safety.

1003 A BIG BANG

A decision-making activity based on a case-study of a fire and an explosion in a warehouse.

1004 LAVENDER

A demonstration of the steam distillation of lavender with reading, questions, data analysis and an outline of the history of a commercial enterprise.

1005 MENTAL ILLNESS

Reading, questions and discussion on the nature and treatment of mental illness and people's attitudes to it.

1006 AS SAFE AS HOUSES

A survey of the structure of buildings, followed by data analysis, information and questions.

1007 240 VOLTS CAN KILL

Practical work, information and questions about the problem of mains electrocution.

1008 WHY 240 VOLTS?

Reading, information, questions and practical work on the choice of a suitable standard for the mains voltage.

1009 TREES AS STRUCTURES

Reading, questions, data analysis and practical work about trees as physical structures.

1010 CAN IT BE DONE? SHOULD IT BE DONE?

Opinion survey concerning the feasibility and desirability of a number of technological proposals.

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