

LIGHT, SOUND & THE EARTH AND BEYOND:

This pack consists of a collection of 25 screens giving a range of activities on light and sound including light sources, reflecting light, shadows, seeing, hearing, sound waves, the position of the Sun during the day, the Moon and the Solar system.

Although this pack supports most of the requirements for KS2 Light and sound & the Earth and beyond (see 'The pack and the curriculum' below), it should be used in conjunction with other elements and lead to practical work and / or further research using IT wherever possible.

THE OPENING SCREEN:



The opening screen provides a choice of buttons. The buttons link to the main topic areas which may be opened in any order.

1. Click on this button for an activity on light sources.
2. Click on this button for information about the buttons used on the screens.
3. Click on this button for an activity on the eye.
4. Click on this button for an activity on the ear.
5. Click on this button for an activity on sound waves.
6. Click on this button for an activity on day and night.
7. Click on this button for an activity on the Moon.
8. Click on this button for an activity on shadows.

CONTENTS:

Children should be encouraged to click the mouse on the various buttons and on text and graphics with speech support.

1. Light sources - grouping graphics.
2. Producing and reflecting light – sorting graphics.
3. Shadows - dragging graphics to the correct places, sentence building.
4. How mirrors work – flipping the graphics, free writing.
5. Light enters our eyes - describing the process, sentence building.
6. How the eyes respond to light - sentence building.
7. Seeing things - an information screen.
8. The parts of the eye - matching the parts and their functions.
9. Hearing things - an information screen.
10. The parts of the ear - matching the parts and their functions.
11. Sound waves - sentence building.
12. High and low pitch - sorting graphics, sentence building.
13. Loud and quiet - sorting graphics, sentence building.
14. Changing pitch and loudness – sorting graphics, sentence building.
15. Sound wave patterns – sorting graphics.
16. Things that we do – sorting graphics, sentence building.
17. Day and night – sorting graphics, sentence building.
18. Does the sun change position? Adding text, sentence building.
19. How shadows change during the day - sorting, sentence building.
20. Investigating shadows. investigating, free writing.
21. The Sun, Earth and Moon - adding text.
22. The phases of the Moon – sorting graphics.
23. Periodic changes - sentence building / free writing.
24. The planets – searching for facts, adding text.
25. Which planets - completing the table.

THE SCREENS:

The screens provide a variety of activities including dragging, labelling, sorting and investigative activities. Many may lead to related classroom activities e.g. ‘hands on’ practical work.

The screens are deliberately basic and uncluttered where appropriate with hidden popups / panels providing additional information, graphics and support.

All the screens have word or picture panels or both which are accessed via buttons. They also have task, answer and research panels, the latter being an additional feature for the KS2 titles.

Children may add to the screens by using the word banks and resource (picture) panels. They may follow the instructions provided on clicking the task button or modify the screens according to their needs. They may check the answer using the answer button and use the arrows to move back and forth between screens.

Software speech is used in the Textease format. Click on the text, speech icons or hot spots where appropriate to hear it spoken.

MY WORLD AND TEXTEASE FORMATS:

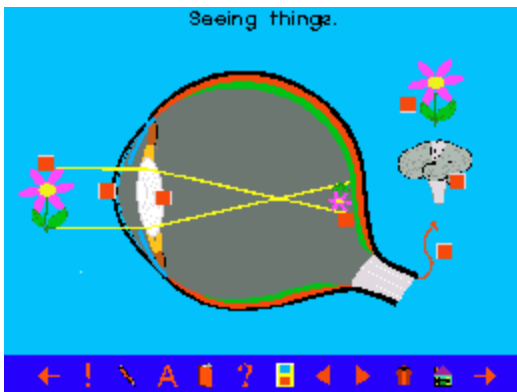
This pack requires My World for Windows, My World 3 or Textease to run. Both formats are provided on the CD leaving the choice to the teacher.

The My World format of the software self installs - the Textease format must be copied onto the hard disk manually. The My World installer installs the Welsh font Ysgol 2. - Textease users should install 'Ysgol 2' by double clicking on the fonts folder and following the instructions on the screen.

My World and Textease screens do not self correct. Some teachers may see this as a disadvantage. The advantages however is that children are given an opportunity to make their own minds up or discuss their ideas with others. Their outcome may be printed allowing My World and Textease screens to be used for assessment where appropriate.

THE BUTTONS ON THE SCREENS:

The buttons on the My World and Textease formats of two different screens are shown below.



1	2	3	4	5	6	7	8	9	10	11	12
MY WORLD FORMAT											



1	2	6	5	11	12
TEXTEASE FORMAT					

The buttons are listed from left to right. See the Textease handbook for the functions of the buttons on the top bar of the Textease format screens.

1. The back button - click on this to go to the previous screen.
2. The task button - click on this for a suggested task.
3. The text button - click on this to create new text.
4. The word button - click on this for a word list or for beginnings and endings of sentences.
5. The research button – click on this for further information.
6. The help button - click on this and on the hot spots within the help panel for support.
7. The resource button - click on this for some useful pictures.
8. The scaling down button - click text or graphics on this to reduce their size.
9. The scaling up button - click text or graphics on this to increase their size
10. The bin - click text or graphics on this to delete them.
11. The home button- click on this to return to the opening screen.
12. The forward button - click on this to advance to the next screen.

THE PACK AND THE CURRICULUM: The pack supports many of the National Curriculum requirements for Key Stage 2 relating to Light and sound plus the Earth and beyond and some aspects of the KS3 syllabus to enable gifted and talented pupils to make further progress.

KEY STAGE 2 – SC4 Light and sound:

- 3a) that light travels from a source.
- 3b) that light cannot pass through some materials and this leads to the formation of shadows.
- 3c) that light is reflected from surfaces.
- 3d) that we see things when light enters our eyes.
- 3e) that sounds are made when objects vibrate but that the vibrations are not always visible.
- 3f) how to change the pitch and loudness of sounds.
- 3g) that vibrations from sound sources require a medium through which to travel to the ear.

KEY STAGE 2 – SC4 The Earth and beyond:

- 4a) that the Sun, Earth and moon are approximately spherical.
- 4b) how the position of the Sun appears to change during the day and how shadows change as this happens.
- 4c) how day and night are related to the spin of the Earth on its own axis.
- 4d) that the Earth orbits the Sun once each year and that the Moon takes approximately 24 hours to orbit the Earth.

KEY STAGE 3 – SC4 Light and sound:

3g) that sound causes the eardrum to vibrate.

3j) the relationship between the loudness of a sound and the amplitude of the vibration causing it.

3k) the relationship between the pitch of a sound and the frequency of the vibration causing it.

KEY STAGE 3 – SC4 The Earth and beyond:

4a) how then movement of the Earth causes apparent daily movement of the Sun.

4b) the relative positions of the Earth, Sun and planets in the solar system.

4c) about the movements of planets around the Sun and to relate these to gravitational forces.

4d) that the Sun is a light source.

THE GRAPHICS:

The graphics used are simple purpose made vector drawings for three reasons:

a) most are basic enough for children to copy them on paper where appropriate.

b) they support the program without being a distraction in themselves.

c) they require less memory than more sophisticated graphics / illustrations.

INCLUSION:

The screens are deliberately basic and uncluttered with hidden popups / panels providing additional information, graphics and support. Teachers / pupils are able to customize and save the screens if required.

Generally speaking, there is little visible text other than the headings on the screens. This reduces the amount of initial explanation / signing required on introducing a new topic to pupils with hearing problems.

Visually impaired pupils may resize moveable text or graphics using the maximize / minimize buttons in the My World format or by selecting then dragging one of the corners' in the Textease format.

The Textease format of the software has software speech support on all the text panels to help children who find the written word difficult. Text on the screens may be selected and heard if necessary using the 'lips' icon on the toolbar.

The research panels may be shortened and scrolled to reduce the amount of text visible at any time to help children who find a large block of text daunting.

ABILITY RANGE / DIFFERENTIATION:

The screens have been designed for use by children of different abilities. Buttons allow them to seek help or further information, so the older / more able pupils may work independently.

Many of the screens have text frames. The provision of text buttons, word banks, support panels and research books provide the requirements for **differentiation by outcome**. The text button (pencil in the My World version or the 'I band' in the Textease version) allow teachers / pupils to write their own text. The research books provide a source of information for those pupils who can cope with free writing. The beginnings and endings of sentences or labels provided in the word banks are for those who cannot cope with free writing.

Children may drag labels and other information to the screens or write their own text. They may use their imagination and customise existing screens or use the self-design screens (see 'Teacher Control' below).

SUPPORT: The help button opens a support panel, which may be shared by several screens within the same topic area. The support may be in diagram or text form and clicking on hot spots within the help panel may open text windows or further help panels.

NEW SCREENS:

Each topic area has one or more 'New screens' (often blank), which are accessed by clicking on the 'new screen' button within the relevant 'task panel'. These new screens are particularly useful when used with related screens having fixed graphics / text and share the same buttons as the latter.

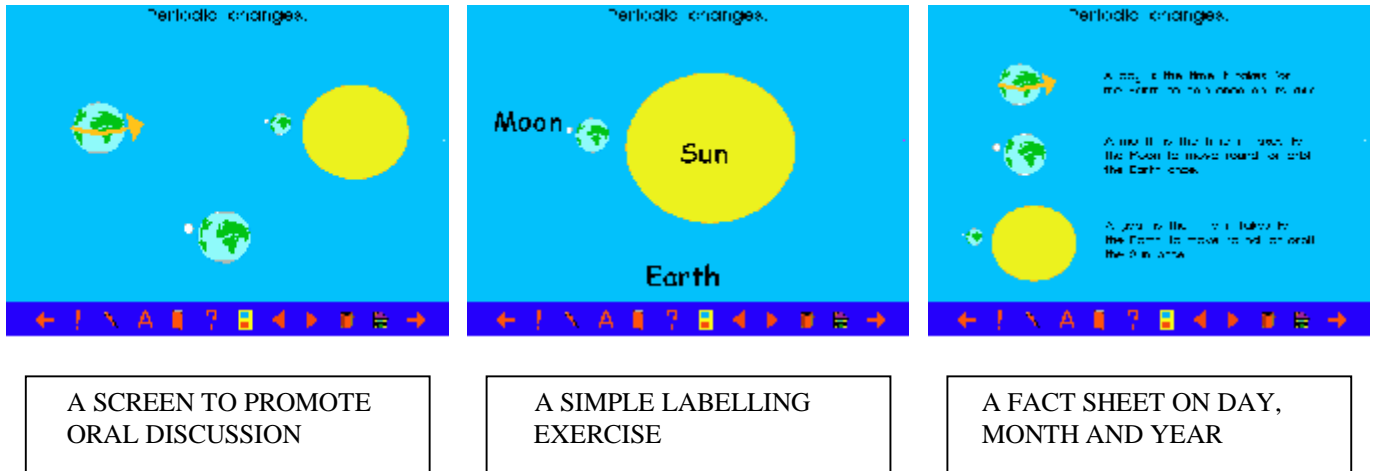
Some of the new screens in this pack are listed under 'Teacher control' below together with some suggestions on their use

TEACHER CONTROL:

At first sight, the screens may not appear to have a great deal of teacher control. However, any moveable object on a screen, be it text or graphic may be deleted or enlarged, and new text may be added. The customized screen may be renamed and saved for future use.

The 'self-design option provided by the new screens allows teachers to adapt screens for pupils with special needs (see overleaf), to carry out group activities or to extend topic areas further. Screens could be customised then saved for use as labelling exercises for assessment.

The example below shows three variations of the 'Periodic changes New Screen' and serves to illustrate the point that the degree of teacher control is only limited by the imagination of the teacher.



A SCREEN TO PROMOTE ORAL DISCUSSION

A SIMPLE LABELLING EXERCISE

A FACT SHEET ON DAY, MONTH AND YEAR

Other New Screen topics in this pack include:

- Light sources** – this screen could be customised to create a simple labelling exercise for younger / special needs pupils or it could be used to illustrate the variety of light sources, both natural and artificial. Light sources could be grouped into those that produce light by combustion and those that produce light by electricity. The screen could be used as a starting point for discussions on how electricity has extended the working day – e.g. making comparisons between past generations of people rising at dawn and sleeping at dusk and present ones watching games by floodlight on winter evenings.
- Seeing things** – this screen could be used to make a fact sheet on how the eyes work and used to promote whole class discussion. It could be customised then saved for use as a labelling exercise for assessment.
- Hearing things** – this screen could be used to make a fact sheet on how the eyes work and used to promote whole class discussion. It could be customised then saved for use as a labelling exercise for assessment.
- Sound waves** – this screen could be used to promote a class discussion on pitch. Sounds suggested by the class could be grouped into high, medium or low pitched sounds.
- Day and night** – this screen offers a lot of potential. It could be used to create a simple labelling exercise on day and night or used to promote group or class discussion / make fact sheets / assessment exercises on how some places are ahead of and others behind Britain in time.
- The time of day** - this screen offers a lot of potential. It could be used to create assessment exercises / make fact sheets or promote group / whole class discussion on a variety of topics for example - what we do / what we eat at different times of the

day; how the temperature and light intensity vary throughout the day; how the apparent position of the Sun changes throughout the day.

- g) **The Sun, Earth and Moon** – this screen could be used to create assessment exercises / make fact sheets or promote group or whole class discussion on the relationship between the Sun, Earth and Moon and their relative sizes.
- h) **The planets** – this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion on the planets, their names and relative positions from the Sun.

INTERACTIVE WHITEBOARDS:

The screens in this pack have been redesigned for more efficient use with Interactive Whiteboards and are ideal for individual or group work and whole class teaching.

FORMATS:

The pack includes the screens in MY WORLD format and TEXTEASE format plus the Welsh font 'YSGOL 2'.

The MY WORLD format requires My World for Windows or My World 3.
The TEXTEASE format requires Textease.

INSTALLATION:

The My World format self installs. Textease users must copy the LightTex folder to the hard drive, then create a shortcut on the desktop to the opening file – 1Light.

FONTS:

The Welsh font Ysgol 2 has been used on the screens by kind permission of the 'Micro-electronics in Education Unit for Wales' (MEU). www.meu.cymru.co.uk

The My World installer should install 'Ysgol 2. Textease users should click on the exe. file within the Fonts folder and follow the instructions to install 'Ysgol 2.

TECHNICAL SUPPORT:

Please contact Clic if you have any problems with the content of this program. Consult the My World help files for problems in running My World. Consult the Textease manual / help files for problems in running Textease.

PRICE AND LICENCE:

Prices and licences are subject to change without warning. Please check the details on our web site before ordering.

RELATED PRODUCTS:

Light, sound & the Earth and beyond is part of the 10 pack **Clic Science Series**.

Other titles in the series are

KS1 Life processes and living things.

KS1 Physical processes.

KS1 Homes and houses (materials and scientific enquiry).

KS2 Humans as organisms.

KS2 Green plants as organisms.

KS2 Living things in their environment

KS2 Materials and their properties.

KS2 Forces and motion.

KS2 Electricity and power.

These packs are available individually or as two collections:

KS1 Starting science.

KS2 More science

FURTHER INFORMATION:

Screens and graphics by GAYNOR PERRY.

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SOURCE OF INFORMATION GAYNOR PERRY. (from over 30 years teaching Secondary School Science in most of its subject areas and Biology to A level, including 20 years as a Biology A level Examiner).

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New version 2002 - 2003

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