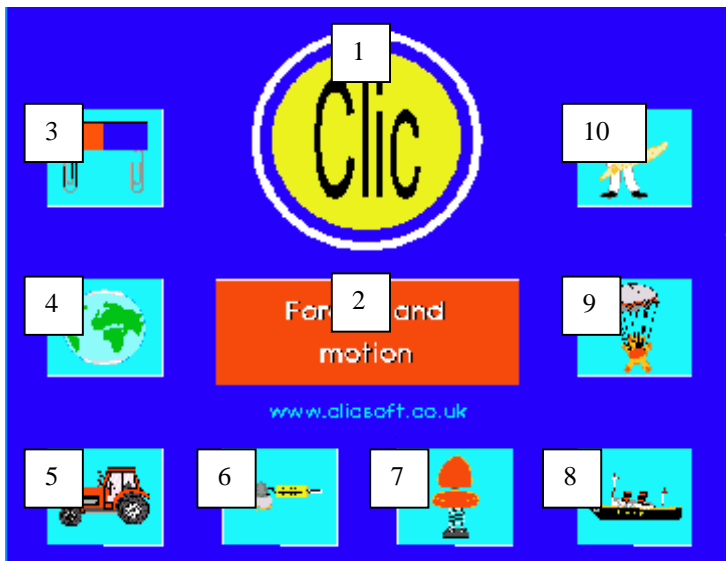


FORCES AND MOTION:

This pack consists of a collection of 28 screens giving a range of activities on the main types of forces including gravitational force, magnetic force, friction, air resistance and water resistance.

Although this pack supports most of the requirements for KS2 Forces and motion (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 types of forces.
2. Click on this button for information about the buttons used on the screens.
3. Click on this button for an activity on magnetic forces.
4. Click on this button for an activity on gravitational forces.
5. Click on this button for an activity on friction.
6. Click on this button for an activity on investigating friction.
7. Click on this button for an activity on springs.
8. Click on this button for an activity on water resistance.
9. Click on this button for an activity on air resistance.
10. Click on this button for an activity on changing shape.

CONTENTS:

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

1. Using forces - labelling and showing the direction of forces.
2. The effect of forces - labelling and showing the direction of forces.
3. Magnetic forces - investigating, sentence building / free writing.
4. Magnetism. – investigating and labelling.
5. Magnetic or non-magnetic – sorting, labelling, free writing.
6. Heavy things and light things. - sorting, labelling, free writing.
7. Weight and gravity - labelling, sentence building / free writing.
8. Measuring weight - pairing weights and force meters, sentence building / free writing.
9. Weight and mass - completing the boxes.
10. Friction - labelling, sentence building / free writing.
11. Friction - hard / easy to move - sorting, sentence building / free writing.
12. The effect of friction - advantages and disadvantages – matching text and graphics.
13. Investigating friction 1 – investigating and describing.
14. Investigating friction 2 - investigating and describing.
15. Recording the results - completing a table and describing.
16. Recording the results - completing a table and describing.
17. Air resistance - sentence building / describing. Simple animation in the Textease format.
18. Aeroplane shape and air resistance - labelling, sentence building / describing.
19. Car shape and air resistance - sentence building / describing.
20. Squashing springs – pairing objects, sentence building / describing.
21. Stretching springs - pairing objects, sentence building / describing.
22. Squashing and stretching springs - investigating and completing a table.
23. Changing shape - labelling and showing the direction of forces.
24. Water resistance - labelling, sentence building / describing.
25. Floating and sinking - sentence building / describing. Simple animation in the Textease format.
26. The effect of forces on movement- sentence building / describing. Simple animation in the Textease format.
27. Balanced and unbalanced forces - sentence building / describing.
28. Changing direction - sentence building / describing. Simple animation in Tex. format

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 overleaf.

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

1 2 6 5 11 12
TEXT EASE FORMAT

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 Forces and motion and some aspects of the KS3 syllabus to enable gifted and talented pupils to make further progress.

KEY STAGE 2 – SC4 Physical processes – Forces and motion:

Types of force:

- 2a) about the forces of attraction and repulsion between magnets, and the forces of attraction between magnets and magnetic materials.
- 2b) that objects are pulled downwards because of the gravitational attraction between them and the Earth.
- 2c) about friction, including air resistance, as a force that slows moving objects and may prevent objects from starting to move.
- 2d) that when objects are pulled or pushed, an opposing pull or push can be felt.
- 2e) how to measure forces and identify the direction in which they act.

KEY STAGE 3 - SC4 Physical processes – Forces and motion:

Types of force:

2b) that the weight of an object is the result of the gravitational force between its mass and that of the Earth.

2c) that unbalanced forces change the speed or direction of movement of objects and that balanced forces produce no change in the movement of an object.

2c) ways in which frictional forces, including air resistance affect motion.

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. The new screens may be customised then saved for use as labelling exercises for assessment.

The example below shows three variations of the ‘Types of forces New Screen’ and serves to illustrate the point that the degree of teacher control is only limited by the imagination of the teacher.



A SIMPLE FACT SHEET ON PUSHING AND PULLING.



A SIMPLIFIED LABELLING EXERCISE ON FORCES



PAIRING THE SAME FORCES PULLING, PUSHING, TURNING

Other New Screen topics in this pack include:

- a) **Magnetic forces** – this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. It could be used to record the results of a practical activity on magnetic and non-magnetic materials. Younger / special needs pupils could use the ticks and crosses in conjunction with the graphics provided to create a minimal text record of their results– older / more able pupils could use the same screen to write up / comment on their results.
- b) **Heavy things and light things** – this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. It could also be used to record the results of a practical activity on heavy things and light things.
- c) **Weight and mass** – this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. It could also be used to record the results of a practical activity on weight and mass.
- d) **Friction** – this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. It could also be used to record the results of a practical activity on friction.
- e) **Investigating friction** - this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. There is tremendous scope for practical work and group discussions involving prediction, planning and recording skills here.

- f) **Air resistance** - this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. There is tremendous scope for practical work and group discussions on air resistance, involving prediction, planning and recording skills here.
- g) **Squashing and stretching springs** - this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. There is tremendous scope for practical work and group discussions on how many everyday gadgets rely on springs, involving prediction, planning and recording skills here.
- h) **Water resistance** - this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. There is tremendous scope for practical work and group discussions on floating and sinking, involving prediction, planning and recording skills here.
- i) **Balanced and unbalanced forces** - this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. There is tremendous scope for practical work and group discussions on balanced and unbalanced forces, involving prediction, planning and recording skills here.
- j) **Changing direction** - this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. Children could use the rotate and flip buttons in conjunction with the graphics provided to create their own fact sheets on changing direction.

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 ForcesTex folder to the hard drive, then create a shortcut on the desktop to the opening file – 1Forces.

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:

Forces and motion 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 Green plants as organisms.

KS2 Humans as organisms.

KS2 Living things in their environment.

KS2 Materials and their properties.

KS2 Forces and motion.

KS2 Light, sound & the Earth and beyond.

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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