

3es multimedia
Science Online
The Newsletter for Science Online Teachers
n e w s

A NEW WAY FORWARD!

The GNVQ qualification is to be phased out by 2007. This, along with the current crop of similar qualifications, is likely to be superseded by the outcome of the Tomlinson Report.

ON 16 FEBRUARY, Mike Tomlinson and his team, the Working Group on 14-19 Reform, submitted an Interim Report to the Secretary of State outlining proposals for a framework of 14-19 curriculum and qualifications.

The main crux of the report proposes an over-arching diploma qualification built up from individual subjects and skills. The Report goes on to identify a number of key elements that are likely to be included in the new diploma system:

- Learning should be ability-related not age-related – learning at your own pace through individual learning plans
- Assessment through practical demonstrations
- Coursework through an extended project
- Recognition for community services, Duke of Edinburgh, sports etc
- Improved vocational options

Having delivered both the International Baccalaureate and vocational qualifications since 1988, the staff at the 3E's Federation of Schools, have had considerable experience in all these



By Pam Kemp
3E's Multimedia

areas and are in a unique position to develop and deliver online content and materials for the new qualification. Together with our multimedia team, we have all the experience of creating, writing,

delivering and assessing diploma-based and vocational courses.

At present, no one can give a definitive answer as to what content schools will be required to deliver in the coming years; however, we know there is now a real long-term emphasis on change.

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**INTRODUCING
 CLICK SCIENCE**

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**ECOLOGY AND
 CONSERVATION**

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**SCIENCE THAT
 STINKS!**

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NEWSLETTER CONTRIBUTIONS
 e-mail Jan on info@3es.com any articles and photos for consideration



CLICK SCIENCE

The Science Online course you are currently using, powered by Digitalbrain.com, will still be available to you in its current format. But running in conjunction with this, we will be introducing a new format of Science Online - called Click Science.

A NEW WAY FORWARD

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Currently, in this interim period, there are a number of routes that can be chosen for the delivery of science education. Many of these, if not all, will be replaced by the outcome of the Tomlinson Report.

- Single/double/triple award GCSE
- BTEC First National Diploma in Applied Science
- GNVQ Foundation/Intermediate/Advanced
- Applied GCSE
- 21st Century Science
- IB Middle Years Programme

Whichever qualification or examination board you choose to go with in the future, 3E's Multimedia are committed to offering you, our valued clients, a continuing service in Science, and a product that will continue to develop and grow.

Clearly, with the knowledge that everything will change, it is not possible for us to choose any one option, and impractical for us to create content that covers each and every aspect of these options. We currently have an enormous number of resources that can help, that are flexible and usable right across the board, whichever qualification you are currently pursuing.

CLICK SCIENCE will be available to current clients at no extra cost under the terms of your existing contract. Click Science will contain many of the current multimedia materials included in Science Online, whilst also offering a wide range of new online resources and lesson management tools that can be used globally rather than limited to specific courses. We will be continually updating and adding to Click Science and hope it will not be long before everyone enjoys using this more flexible environment.

In the meantime, we will be concentrating on the Key Stage 4 National Curriculum – so whatever syllabus or course you are following, there will be a wealth of useful materials for you. All syllabuses and courses will be covered in varying degrees. Initially, our aim is to address widely-used, generic areas together with various vocationally-based areas such as science in the workplace, hazards in the workplace and industrial importance. We will then systematically build up other areas to widen the overall scientific coverage of the content. We aim to cover as much as we possibly can.

We are currently looking into a number of



By Pam Kemp
3E's Multimedia

exciting areas, and our initial points of focus with regard to new content are human physiology, movement and transportation of molecules, Newtonian physics, world of work and the Earth and beyond.

To give as much support to schools and teachers, the launch of Click Science is scheduled for late 2004.

The first version will include:

- An improved interface
- Search engine
- Lesson planning and grouping tools
- Features to improve the use with interactive whiteboards
- Additional content

As the Tomlinson Report is implemented, working closely with the necessary bodies and authorities, we will be aiming to develop a complete solution supporting the delivery of the new Key Stage 4 curriculum, which will assist schools during this transition.

Our team and its partners are working hard to ensure that you will continue to enjoy the features of Science Online throughout this period of change. We are committed to creating a product that will continue to grow, and will support teachers in the raising of standards both now and in the future.



Contents

- Static electricity
- Diffusion
 - Introduction
 - Gas exchange (Lungs)
 - Gas exchange (Tissues)
 - Gas exchange (Plants)

Diffusion / Gaseous exchange in the lungs

▶ || ◀

Oxygen is at a higher concentration in the alveoli (21%) and a lower concentration in the blood from the body (15.6%), so oxygen diffuses from the alveoli into the blood. The walls of the alveoli and capillary are one cell thick so diffusion occurs quickly.

Contents

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Diffusion / Gaseous exchange in tissues

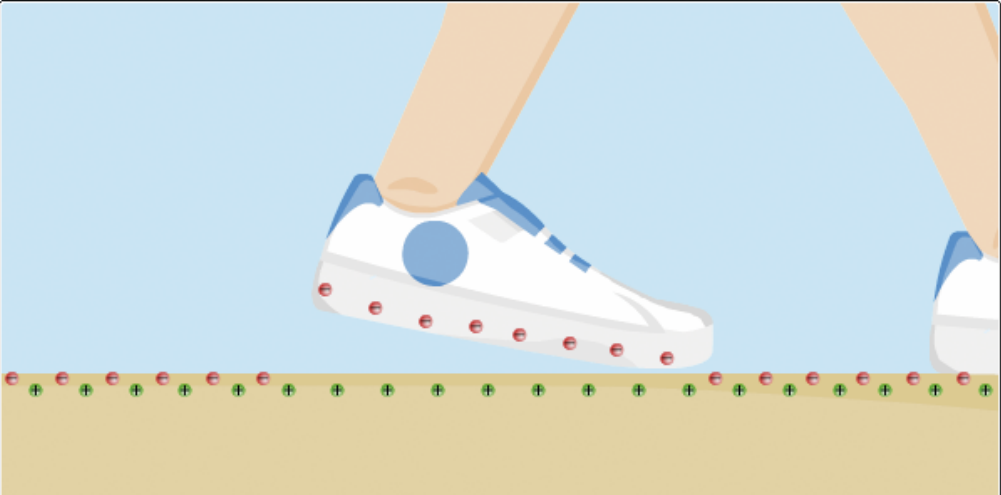
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Carbon dioxide is made in the cells of the body as a waste product of respiration. The carbon dioxide in the body cells is higher than in the blood in the capillaries. As diffusion is the movement of molecules from high to low concentration, the carbon dioxide will diffuse from the body cells into the blood.

Contents

- Static electricity
 - Charging polythene
 - Charging acetate
 - Attraction
 - Repulsion
 - Static shocks
 - Lightning
 - Van der Graff generator
 - Gold leaf electroscope
- Diffusion

Static Electricity / Static shocks



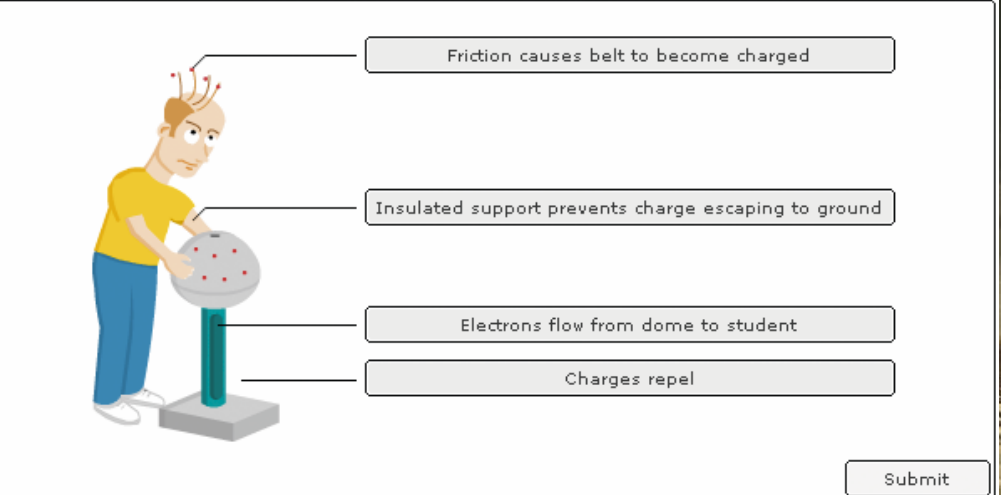
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Static shocks are caused when charged objects discharge very quickly. We can become charged when rubbing our feet on certain carpets.

Contents

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Static Electricity / Van der Graff generator



Friction causes belt to become charged

Insulated support prevents charge escaping to ground

Electrons flow from dome to student

Charges repel

Submit

Drag and drop the four statement boxes rearranging them into the correct order. Then click on the submit button to see how well you have done.

These are representative screenshots only. Due to ongoing development, the content is subject to change.

ECOLOGY & CONSERVATION



'Ecology and Conservation' is a popular unit within the GNVQ Science program, with many centres choosing this as one of the optional units. The unit requires two distinct components to fulfil the criteria laid out by the examination board in the banner of the assessment sheet.

THE HABITAT STUDY

STUDENTS NEED to complete a study of a habitat. Although there are some computer simulations for population growth, and factors affecting this, these alone are not sufficient to fulfil the criteria P1, and the sampling techniques do need to be used to collect real data such as light intensity, temperature, soil composition, pH, altitude, water composition, dissolved oxygen etc. Obviously the measurements taken will depend on the habitat studied (woodland, coastline, river, field). Similarly the wildlife present will need to be sampled. For plants this is relatively straightforward and a number of relevant field-guides can prove useful with identification. Leaf litter and sweep nets in streams can provide species at the lower end of the food chains for identification. Larger animal populations may need to be estimated. Organisations that may be able to help with this



By Adrian Tucker
King Richard School

include The National Parks, RSPB etc.

These two elements of the study then need to be linked together for P2 and M2. Students must explain species occurrence and distribution in terms of the physical characteristics of the environment. P3, M3 and D2 require feeding relationships to be identified and quantified.

Some centres opt to take students away to field centres to complete the practical work with support from centre staff trained in environmental education. Advantages of this can be that some of the more expensive equipment is provided, but overall cost can be prohibitive. Kingswood Educational Activity Centres based either in North Norfolk or the Isle of Wight specialise in environmental education and are more than

prepared to run residential courses specifically tailored to the course requirements. They can be contacted on 01603 284 284.

If this is not an option then it is worth considering if you have the facilities close to the school upon which to base the study. If so this could be the optional unit for you.

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THE CASE STUDY

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Criteria P4, M4, and D3 require students to conduct a case study of a habitat damaged by man and an analysis of how this damage has been reversed.

There are many examples of this including the Exxon Valdez, Chernobyl or an area of local land that may have been given a clean up (The Thames in London for example). The difficulty with some of these is having data to analyse in order for students to assess the effectiveness of the measure taken. At King Richard School in Portsmouth, students study a Swedish Fjord near Himmerfjarden for the effects of eutrophication. In 1997 a sludge dryer was built at the sewage farm that deposits in the fjord in order to reduce pollution level. There are data of all aspects of water quality going right back to 1995 both for the farm and at a number of monitoring buoys in the Fjord itself. Details can be found at:

www2.ecology.su.se/dbhjf/hfjsmall2.shtml

Further details on the sludge dryer and the academic essays that have been written concerning the study of the Himmerfjarden Fjord can be found by typing "Himmerfjarden" into Google.

The unit is well worth considering especially if you can fit it into the summer of the first year of the course when a field study can be a pleasant experience. Cross curricular links with geography can lead to students completing the module with a thorough understanding of the environmental issues that surround them in the world, and can generate ideas that can be taken into other areas of the curriculum.

SCIENCE THAT STINKS!

The original beauty of the GNVQ science course has been the flexibility and in some areas necessity to link the science of the classroom with the experiences of scientists and workers in industry.

UNFORTUNATELY, with the pressures and demands placed on the modern teacher, finding industry links that are relevant and productive often take time and energy to set up: so here is a time saving suggestion: try your local sewage farm. Every large town has at least one nearby, so the need to travel great distances is minimised.

The relevance to the course of this type of field trip is self-evident: in Unit 3, for example, when students are expected to study an organism and examine the factors that contribute to successful growth, they find themselves in a similar situation to the sewage plant that seeks to maintain as healthy a culture of bacteria as possible in the biological filters. Similarly, where we make sure the sellotape on our Petri dishes still allows air to pass over the plates, the sewage farm uses worms to keep the flow of air free from blockages. Another good analogy occurs with the food the bacteria



By Andy Guest
Broadlands School

consume: rather than the tame malt agar used in the lab, human sewage is spread over the filters by the large arms characteristic of such places. The water companies in most regions are becoming more and more visitor friendly with information centres and site guides and they are happy to show school parties around. Go on, give them a call!



BESPOKE TRAINING

We are able to offer bespoke training days to suit your school's particular needs. These can be carried out either at your school site or here in Birmingham at The City Technology College, Kingshurst.

FULL DAY'S TRAINING		HALF DAY'S TRAINING
AT YOUR SCHOOL	AT CTC KINGSHURST, BIRMINGHAM	AT CTC KINGSHURST, BIRMINGHAM
£1000 + VAT and expenses	£150 + VAT per delegate	£80 plus VAT per delegate
(Up to 15 delegates)	(From 6 to 15 delegates)	(Up to 15 delegates)

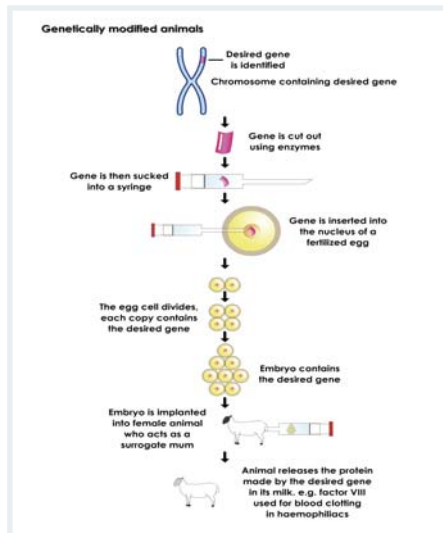
If you are interested in booking please contact Jan Richards on **0121 329 8366** or e-mail your requirements to jan.richards@3es.com

RESOURCE CENTRE NEW ADDITIONS

The latest additions to the Resource Centre have focused on Unit 6 'Biotechnology and Genetics' and Unit 7 'The Chemistry of Renewable Resources'. There is a scheme of work for each that highlights when and where the resources can be used.



By Sarah Dawson
The City Technology College, Kingshurst



UNIT 6

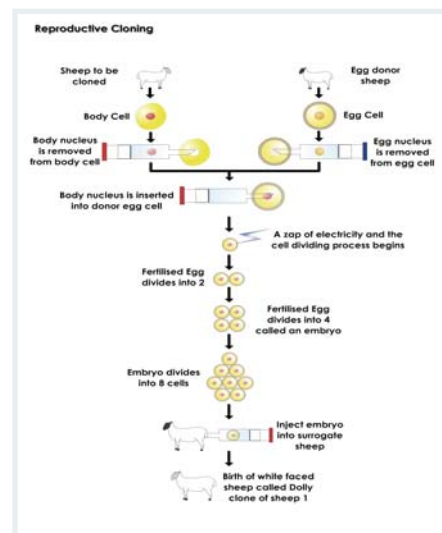
A comprehensive set of information sheets covering many aspects of biotechnology and basic associated knowledge have been added. These include 'Animal sex cells', 'How animals normally reproduce', 'How twins are made', 'Cloning: Artificial twinning', 'Reproductive cloning', 'Therapeutic cloning: Stem cells', 'Genes', 'Gene therapy', 'Genetically modified organisms', 'Genetically modified bacteria', 'Genetically modified animals' and 'Genetically modified plants', 'DNA profiles' and 'The Human Genome Project'.

Also available is a detailed biotechnology survey to find students' attitudes and make them consider the pros and cons of biotechnology.

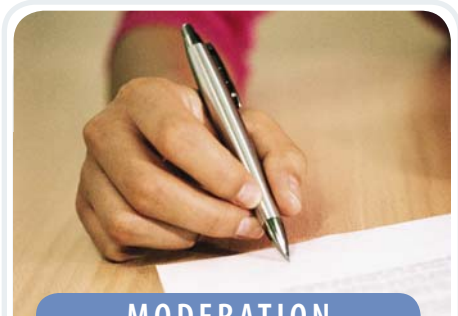
There are also further materials covering the Unit 6 experiments; 'Cloning cauliflower method', 'Problems with cloning cauliflower help sheet', 'Cloning cauliflower write up sheet', 'Factors affecting yogurt production worksheet', 'Making yogurt methods', 'Producing yogurt under optimum conditions worksheet', 'Datalogging monitoring yogurt pH worksheet' and 'Comparing yogurt production to industry worksheet'.

UNIT 7

These supplementary resources centre on fuels, cells and energy, soaps and detergents and synthetic and natural dyes. They include 'Fuels method sheet', 'Fuels results sheet', 'Fuels report template', 'Fuels report information booklet', 'Comparing cell voltages help sheet', 'Finding out how long cells last help sheet', 'Energy report template', 'Soaps and detergents method sheets', 'Detergents record sheet', 'Soaps record sheet', 'Soaps and detergents write up sheet', 'Soaps and detergents crossword', 'Soaps and detergents ingredients', 'Soaps and detergents report template', 'Natural dyes method sheet', 'Synthetic dyes method sheet', 'Natural dyes results sheet', 'Synthetic dyes results sheet', 'Activity 7e dyeing lesson plan', 'Activity 7e method sheet', 'Activity 7e results sheet' and 'Dyes report template'.



To access these resources, firstly click on the 'Teacher Guidance' link on the front page of the course. Then click on the 'Resource Centre' link followed by the unit number you want. To contribute to the Resource Centre, simply e-mail the documents to info@3es.com or follow the instructions on the website.



MODERATION

Portfolio Moderation Assistance

We have received a number of calls recently in connection with assistance in portfolio moderation and we would like to outline the support that is currently available to you in this area.

For schools following the OCR syllabus, a service is currently available directly from OCR and is accessible via their website. OCR is able to scrutinise two or three completed portfolios free of charge. Unfortunately this offer is not available for schools following the AQA or Edexcel courses.

Similarly, we are able to offer a scrutinising service until the end of July 2004 for up to two portfolios per school. Please note that only completed and marked portfolios will be scrutinised; unannotated/unmarked work will be returned unscrutinised.

Please note that this service is for guidance only and marks may be adjusted annually to keep in line with national expectations.

If you would like to submit portfolios for scrutiny please send them directly to: Jan Richards, 3E's Multimedia, Cooks Lane, Kingshurst, Birmingham B37 6NZ.

Please ensure that you enclose your school name and return address, we would suggest that you only post a photocopy to us.

3ES MULTIMEDIA

Revolutionary digital tools under development

3E's Multimedia curriculum certified online courses have already been well received by schools throughout the UK.

We wanted to capitalise on the experience we have honed through the creation of courses like Science Online and ICT to develop two innovative product concepts – the Nutrition & Healthy Eating Solution and the Work Experience Tool.

It is important to note, however, that these products are still under development and solutions will be tailored to meet individual organisations' requirements.

Codename Nutritionland

By using authored curriculum certified content we have provided creative, effective and interactive nutrition and health solutions for students and retail organisations alike. We highlight the need for balanced healthy eating and stress the importance of exercise.

In our experience children respond well to games, missions and challenges and, with this in mind, we have designed a solution that delivers all these elements and will leave the student excited, informed and with a greater understanding of a healthier lifestyle.

The software, codenamed Nutritionland, is designed to be a reliable and easy to follow interactive tool for students to learn about the body and its reactions to different fuels. This solution can, in turn, help retailers attract new and informed shoppers. It also gives supermarket retailers a unique opportunity to promote their healthy eating message in the community and educate students who are the customers of the future.

Adding value to work experience

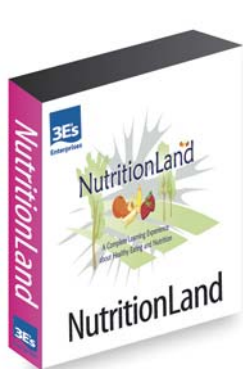
Work experience can be a chore and not just for the student! Highly paid professionals do not want to oversee work experience students constantly throughout their placement. This is simply not time or cost effective for the host organisation.

Having students involved in work experience programmes costs commercial organisations both time and money. Let's face it, in some cases it

can be just a downright hassle. In a nutshell, 3E's Multimedia Work Experience Tool will provide both students and companies with a tool that details whichever aspect of the organisation is relevant to the training. What's more, the content of the interactive tool will be formulated by teaching professionals and designated experts from the host company. Practical issues, safety and specific processes related to the area of work all in one comprehensive package.



If you would like to find out more about these specific products please contact info@3es.com. Further information about all our products can be found by visiting our award-winning website at www.3esmultimedia.com.



NutritionLand

An interactive nutrition and healthy eating resource ideal for KS3 students.



Work Experience

A highly-effective and cost efficient solution for employers to provide quality work experience placements.



Science Online

The Science Online course covering Intermediate GNVQ.



KS3 ICT

A complete interactive resource to deliver Key Stage 3 ICT.

