NCE-MSTL
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Transition Year Science Resources

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Keeping up-to-date

The Transition Year provides a unique opportunity for teachers to teach science in an imaginative and relevant way without the confines of a syllabus or an examination. It offers teachers the exciting prospect of changing students' views of science through teaching interesting and relevant material.

This NCE-MSTL Guide will survey some of the resources available to the Irish Transition Year science teacher. A follow on Resource and Research Guide will review adaptable resources for the Transition Year from the U.K.

PharmaChemical Ireland's Transition Year Science Resources:

PharmaChemical Ireland, in conjunction with Discover Science & Engineering and the Transition Year Curriculum Support Service (TYCSS) has developed a series of science modules for Transition Year students. There are a variety of modules available:

- Forensic Science
- Sports Science
- Microbiology
- Cosmetic Chemistry
- Medical Physics

Each module consists of the following sections: Brief Career Information, Student Worksheets and Teacher Packs. The modules are designed so they can cover one or several class periods - depending on what is more suitable for individual schools. All of the material is freely available on CR-ROM upon request to Siobhan Murphy at: siobhan.murphy@ibec.ie, Tel: 01 605 1671, or can be downloaded from the PharmaChemical Ireland website, given in reference below.

Reference: PharmaChemical Ireland (2007), 'Education Centre Transition Year Science' [online], available: http://www.pharmachemicalireland.ie/Sectors/IPCMF/IPCMFDoclib4.nsf/wvEDIC/D425F7F8AD286FE680257450002FB85B?OpenDocument [accessed 12 November 2007]

Science and Technology in Action

"Science and Technology in Action is a multi-faceted resource. The hard copy presentation pack contains lessons and associated teaching materials. The lessons are designed in close collaboration with practising teachers and advisors. Each lesson relates to the activities of one of the participating organisations. In this way the lessons help to enhance the relevance of science to our everyday life. This grounding in reality is designed to raise awareness and engage students in the world of applied science and technology."

The folders and CD ROMs were distributed to all second level schools in Ireland in 2005 and 2006. Each lesson is associated with one of Ireland's leading scientific organisations and its activities. The second edition (released in 2006) deals with the application of science and technology in real life situations. Both the first edition and the second edition contain nineteen lessons in ring binders, while the accompanying CD ROMs contain all lessons in a printable format. The more recent third (2007) and fourth (2008) editions contain 16 and 19 lessons respectively. Once again both of these editions are in ring binders with accompanying CD ROMs.

(Source: http://www.sciencetechnologyaction.com)

Reference: Science and Technology in Action (2007) *'Lessons'*, [online], available: http://www.sciencetechnologyaction.com [accessed 17 Feb 2009]

X-ploring Science Website:

The X-ploring Science website, produced and designed by Humphrey Jones, a science teacher, is designed as a tool to allow students to take responsibility for their own learning. There are a series of web-quests aimed at

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Transition Year Science students. The web-quest allows for a structured learning approach when using the internet for research purposes, reducing the endless searching for relevant information that can so often happen when not using the internet appropriately for research purposes. Each web-quest provides the students with a task, guidelines for carrying out the task, resources and links, related puzzles, and a means of evaluation. For the teacher, the work required is minimal but all information with regards assessment is clearly presented. Students become the scientist and have to research the topics. The web-quest model provides a safer, more structured approach to using ICT in the classroom. Students become more independent, learn organisation skills, presentation skills, team building skills and of course general IT skills.

The following topics are explored:

- Ecology
- Flight
- Space
- Evolution
- Elements

The X-ploring Science website can be accessed at: http://www.teachnet.ie/hjones/x-ploringscience/index.htm

Reference: Jones, H., Gorey Community School (2004) '*X-Ploring Science'*, [online], available: http://www.teachnet.ie/hjones/x-ploringscience/index.htm [accessed 20 Nov 2008]

University of Limerick's 'TY Science' Resources:

Dr. Peter E. Childs at the University of Limerick, in conjunction with trainee science teachers, has developed resources for the Transition Year programme. These resources are known as 'TY Science' modules. The 'TY Science' modules were first developed in 2002 and five 8-9 week modules have been developed, piloted, revised and made available to teachers at low cost. One of the modules was formally evaluated (Science of Sport) and the others were revised on the basis of teacher's diaries and questionnaires. Most of the students involved have developed the modules as part of their Final Year Projects, providing them with experience of curriculum development and implementation. The modules are designed to meet the TY Option (TYO) guidelines and build on Junior Science, with an emphasis on active learning. The TY Science modules offer science teachers a wide choice of suitable resources to choose from to meet the TYO objectives and provide a stimulating introduction to Leaving Certificate science courses. The project has utilised the innovative ideas and the energy of trainee teachers in collaboration with the expertise and experience of teachers in Irish schools. Each resource is produced in the same format, a teacher guide and a student handbook. There are 8 (or 9) week long units – each consisting of one single lesson and one double lesson, with an optional extra single lesson. Each unit relates to the overall theme of the module, but, can be taught independently. These units make up the module. The modules that have been produced to date are:

- The Science of Sport
- Forensic Science
- Cosmetic Science
- Environmental Science & PowerPoint
- Science of Survival

Currently, there are five new modules in production. The topics covered in these new modules are listed below:

- Issues in Science
- Space Science & Technology
- Science and Medicine
- Food Science
- Science of Cleaning

All modules can be ordered from Dr. Peter E. Childs at: peter.childs@ul.ie

These modules are based on a constructivist approach with an emphasis on practical work, active and problem based learning.

These modules are presented in the form of a photocopiable teacher's guide and student handbook. The modules are available for sale as a teaching package at €10 per module, and over 450 have been sold to date, with positive feedback from teachers. Additional copies of the student handbook can be purchased at €5 per copy.

Reference: Childs, P. E., Hayes, S., and Sheehan, M. *'TY Science: a project to develop, evaluate and revise*

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science teaching materials for Transition Year', Educational Studies Association of Ireland Conference, April 2009.

Cutover & Cutaway Bogs Education Pack:

The Irish Peatland Conservation Council (IPCC) offers the Cutover & Cutaway Bogs Education Pack. This is a 120 page Transition Year package for students. Its focus is on the bogs of the Irish Midlands. There are 12 chapters on wildlife, habitats, archaeology, socio-economic uses and after use of the cutover and cutaway bogs. The pack also includes:

- Over 150 colour photographs of cutover and cutaway bogs.
- Twelve chapters written by experts on the wildlife, habitats, archaeology, socio-economic uses and after use of the cutover and cutaway bog resource.
- Step by step directions for three practical projects on cutover and cutaway bogs for you to do with transition year students.
- Work sheets.
- Photographic guide to the key species and habitats of cutover or cutaway bog.
- Picture I. D. charts to over 100 plants and animals. Soil and peat types key.
- Glossary of 50 technical terms.
- Detailed practical information on 9 sites to visit.
- Checklists of birds, plants and animals.

There is also an online educational resource at the address below which can be used either to complement the Transition Year pack or as a stand alone resource (Irish Peatland Conversation Council 2004) Online educational resource: http://www.ipcc.ie/educationcat.html

Reference: Irish Peatland Conservation Council (2004) *'Teacher Training'*, [online], available: http://www.ipcc.ie/educationcat.html [accessed 15 Jan 2009]

Transition Year Units

Currently the National Council for Curriculum and Assessment (NCCA) are developing new Transition Year Units. However, due to current budget constraints it is unknown when these units will be formally launched. Transition units (TUs) are one of the new curriculum components in senior cycle. What is distinctive about Transition Units is that they will be developed by schools. The key features of Transition Units are:

- they are designed as 45 hour courses
- they are developed by schools or agencies working with schools
- they are based on current TY modules
- assessment is built into the teaching and learning
- there is no external assessment and they will not count for points

The following link to the NCCA website http://www.ncca.ie/en/Curriculum_and_Assessment/Post-Primary_Education/Senior_Cycle/Senior_Cycle_Review/Transition_Units/Transition_Units.html gives teachers a clearer picture of what the Transition Units are about, and how to get involved in creating your own, or sharing with other teachers. Or you can contact schoolnetwork@ncca.ie to register your interest in developing transition units.

(NCCA 2008)

Reference: NCCA (2008) 'Transition Units Developing New Curriculum Components', [online], available: http://www.ncca.ie/uploadedfiles/Senior%20cycle%20review/TU_info_art.pdf [accessed 13 Feb 2009]

Institute of Technology Cork: Exploring Electronics

The programme covers some career exploration as well as seven different teaching units:

- Unit 1 Basic Electricity
- Unit 2 Thermistor and LDR
- Unit 3 Semiconductors and Diodes
- Unit 4 Transistors 1
- Unit 5 Soldering
- Unit 6 Flashing Lights Circuit
- Unit 7 Bagpipes Circuit

The Teacher's pack €30 + VAT includes:

- Detailed manual covering theoretical and practical material.

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- References to relevant books, videos, web sites, and organisations which will be of interest to students and teachers.
- Relevant assessment sheets.
- Module Certificate.
- Details of where all required equipment and materials can be obtained.
- Details of the kits chosen and options for further development and application of the circuits.

Implementation of the module: Each of the teaching units is intended to be of two-hour duration (three forty-minute classes). It is preferable if two of these classes are available as a double period in order to facilitate the practical work. The main teaching units of the module could then be covered in a seven-week period. It is proposed that a cross–curricular approach be adopted to the section on Electronic Engineering in Practice. The background work and assignment could be included as part of a career guidance session either before or during the delivery of the module. The use of the computer simulation package (Crocodile Technology Program) requires that a computer lab be available for some of the double sessions. This Technology program has now been re-branded and called Yenka. A basic free version of the software for students and teachers is available for download from:
http://www.yenka.com/en/Yenka_Electronics/
Further information about this resource is available from Chip Electronics on 021 4289958

Reference: Cork Institute of Technology (2009), 'Exploring Electronics - A Transition Year Module' [online], available: http://e-eng.cit.ie/ExploringElectronics.html, [accessed on 29 Jan 2009]

Irish Pharmaceutical Healthcare Association, Medicines and You: Medicines and You is an educational resource developed by the Irish Pharmaceutical
Healthcare Association for senior cycle students. Medicines and You aims to:

- inform senior cycle students about medicines
- give them the skills needed to use medicines effectively
- develop positive, responsible attitudes towards medicines and their uses

It also aims to give students some of the critical skills necessary to use healthcare sites on the Internet. Medicines and You is presented as a CD and website (www.medicinesandyou.ie) to maximise flexibility and to allow teachers to develop and use the pack as best suits the students and school. The different units help students to work scientifically through a range of ideas related to medicines and then to apply them to their everyday world. The teaching material in Medicines and You comprises seven stand-alone units:

- Getting the Best from your Medicine.
- Medicines and the Body.
- Medicines and Disease.
- Preventing Disease – the role of vaccines.
- Managing your Minor Ailments Effectively.
- Researching and Developing new medicines.
- The Pharmaceutical Industry in Ireland

To obtain a copy of the Medicines and You CD, please email *schools@ipha.ie* or call + 353 (0)1 6603350. For extra copies of the support documents, including class sets of the booklets contact Tel: +35316603350 or email: schools@ipha.ie. Each unit comprises four sections – teacher guidelines, student information sheet (except Unit 5), glossary and student activity sheet.

Reference: Irish Pharmaceutical Healthcare Association (2006), 'Medicines and You' [online], available: http://www.medicinesandyou.ie/index2.htm, [accessed on 24 Jan 2009]

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