

VCE Biology and Environmental Science Teachers' Conference 2012

Monday 20 February 2012 at La Trobe University, Bundoora

Each participant will have web access to proceedings from the VCE conferences series as part of their registration.

The VCE Biology and Environmental Science Teachers' Conference is an approved pdi professional learning activity.



Conference Program

8:00am	Registration opens
8:30am - 8:35am	Welcome by STAV President – Soula Bennett
8:35am - 9:35am	Keynote Address Dr Marnie Blewitt, The Walter and Eliza Hall Institute Epigenetic Control of Gene Expression in Mice and (Wo)men
9:35am – 10:15am	VCAA Update Maria James, Victorian Curriculum Assessment Authority (VCAA) National Curriculum – A Victorian Perspective
10:15am - 10:45am	Morning Tea/Displays
10:45am - 11:45am	Workshops - Session A
12:00pm - 1:00pm	Workshops - Session B
1:00pm - 1:45pm	Lunch/Displays Union Hall
1:45pm - 2:45pm	Workshops - Session C
3:00pm - 4:00pm	Meet the Assessor – Hugh Latimer Hugh will discuss the VCAA Assessor's reports for the 2011 Unit 3 and 2010 Unit 4 examinations.
4:00pm	Conference ends

Registration information, La Trobe University Map and all conference information is available on the Science Victoria website: www.sciencevictoria.com.au/conferences.html

Major Sponsor:



BIOZONE



**Science Teachers' Association of Victoria Inc.
VCE Conference Series 2012**

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Keynote Address

8:35am – 9:35am

Epigenetic Control of Gene Expression in Mice and (Wo)men

Dr Mamie Blewitt, The Walter and Eliza Hall Institute

All cells have the same DNA sequence, the same genetic code. How is it that the same genetic code, or same book of instructions can produce hundreds of different cell types with all their different functions? The term epigenetic was used to describe the information that must exist in addition to the genetic information. We now know that these epigenetic marks allow the use of just particular sets of the genes in each cell, rather than all being used in every cell. So, what are these epigenetic marks? They can be considered as punctuation marks in the genome; they allow the genome to be interpreted, just like full stops, exclamation marks, commas, spaces and paragraphs help us interpret the letters in language. They tell the cell when to use a gene, like an exclamation mark, or when to turn a gene off, like full stops. These epigenetic marks are important throughout development, from fertilisation onwards. As you might expect, when epigenetic marks go awry, this results in a plethora of different diseases. Interestingly, while these marks can be very stable through cell division, these marks are also removed between generations, so the marks are inherently flexible. This flexibility in combination with the role of epigenetics in disease means epigenetic marks have tantalising therapeutic potential. In this presentation I will talk about epigenetic marks and the proteins that lay down these marks. I will describe epigenetic control in two different model systems: X chromosome inactivation and genomic imprinting, and finally give a brief summary of my own laboratory's research.

VCAA Update

9:35am – 10:15am

National Curriculum – A Victorian Perspective

Maria James, Victorian Curriculum Assessment Authority (VCAA)

What is happening with the national curriculum in science, and what are the implications for implementation in Victoria for Years Prep to 12? This presentation will outline the latest national curriculum developments for primary and secondary years of schooling, including progress in the development of national senior science courses. Time will be scheduled to address questions from the audience.

Environmental Science

Morning Tea/Displays
10:15am to 10:45am

Session A

10:45am – 11:45am

AE1 A Curious Case of Climate Change

Dr Eroia Barone-Nugent, Santa Maria College

The result of an integrated curriculum approach to investigating climate change during Australian colonisation has excited students at Santa Maria College to question how the Australian environment has changed due to human activity. Using the SEARCH website established at the University of Melbourne it was possible for year 10 students to collect and collate data from historical documents so that the process of natural long-term environmental changes and their effects in ecological succession, drying of the Australian continent, extinction of species, and climate change was explored in an authentic manner and the students made a real contribution to climate research.

Suitability: All
Not repeated

AE2 Accurate Dual Temperature Measurement in the Classroom and Sustainability

Andrew Reid, Imaging Associates International

At our website www.sustainabilitymeasurement.com we introduce the new ThermoSense Mk1 & The Free ThermoSoft Mk1 supporting software available in both Fixed-Site and Portable Flash drive formats. This Software may be used on any number of computers, for any number of teachers and students both in Fixed-Site & Portable Application Format on any Windows PC in the classroom and on students home computers. This Free Software is used with ThermoSense Mk1 hardware. ThermoSense MK1 measures two temperatures over the range -10 degrees centigrade to 115 degrees centigrade accurately and at low cost with a resolution of 0.1 degree centigrade with good response times. The two sensors track very closely and offer excellent temperature difference measurements often needed in the evaluation of Thermal Insulation materials, Thermal Comfort

situations and On-Site investigation relating to Architectural Design. Those students who may wish construct their own home grown ThermoSense hardware are welcome to use the free ThermoSoft Mk1 software. An Application Note on how to construct "ThermoSense Home Grown" will be available for Download soon. The website will also feature Free Educational Notes, Application Notes and suggested Experiments such as Temperature Rise in a motor car. It is hoped that cross fertilization of Experiments using Temperature Measurement as related to environmental issues between schools will occur along the lines of the 'School Energy Doctor' program in the USA. Other products in the ThermoSense Data logging range are under development. Advance software to meet Heat Transfer, Thermal Conductivity, in multiple sensor situations is under development. Future i-Wire hardware will address soil evaporation and solar radiation energy measurement.
Suitability: VCE Unit 1
Extension Education
Repeated as CE2

AE3 BIOZONE Showcase their New DIGITAL Titles for Environmental Science

Richard Allan - Biozone Learning Media Australia

BIOZONE has published a substantially revised 2nd edition of the popular Environmental Science Modular Workbook. With an additional 60 pages of activities and new learning objectives at the beginning of each chapter, it will greatly enhance your teaching programme. This workbook is complemented by a massive Presentation Media collection. Comprised of 670 editable PowerPoint slides, these are ideal for classroom lectures using a digital projector or interactive whiteboard. Hear about the iPad/iPod versions of these products for your students. A FREE sample of the new 2-colour Environmental Science workbook (2nd edition) will be provided to each workshop attendee.

Suitability: All
Commercial Presentation
Repeated as BE3

Environmental Science

Session B

12:00pm – 1:00pm

BE1 Using Blackboard Collaborate for Online Learning

Britt Gow, Hawkesdale P-12 College

Sustainability is a hot topic, but many schools don't have teachers with the expertise or lack sufficient interested students to be able to offer Environmental Science as a subject in VCE. In 2011 I offered this subject online and taught a class of eight students from four different schools, using a blog, Blackboard Collaborate, email and Skype. In this session learn how Blackboard Collaborate works, so that you can join us with your students to enhance their learning in Units 3 and 4 Environmental Science this year.

Note: Please bring your own headphones with a microphone. You may prefer to use your own laptop.

Suitability: VCE Units 3&4

Repeated as CE1

BE2 Climate Change – New Science, Old Arguments

Keith Burrows, AIP Ed Com (Vic)

Since the 2007 IPCC report climate science has progressed a long way, and yet according to some people 'climate science is crap'. How is it that although the science is actually well established the public perception of it seems to be quite the opposite? The answer of course is that it is being badly misrepresented in the media. The purpose of this session is to try to bring you the latest developments in climate science and to give sound science based answers to much of the nonsense that we hear 'out there' in the public arena.

Suitability: All

Extension Education

Not repeated

BE3 BIOZONE Showcase their New DIGITAL Titles for Environmental Science

Richard Allan - Biozone Learning Media Australia

Suitability: All

Commercial Presentation

Repeat of AE3

**Lunch/Displays
1:00pm to 1:45pm**

Session C

1:45pm – 2:45pm

CE1 Using Blackboard Collaborate for Online Learning

Britt Gow, Hawkesdale P-12 College

Suitability: VCE Units 3&4

Repeat of BE1

CE2 Accurate Dual Temperature Measurement in the Classroom and Sustainability

Andrew Reid, Imaging Associates

International

Suitability: VCE Unit 1

Extension Education

Repeat of AE2

CE3 Discovering Environmental Science at Ecolinc

Suzanne Clark & Jacqui Slattery, Ecolinc

Ecolinc is a Department of Education and Early Childhood Development (DEECD)

Science Specialist Centre situated in

Bacchus Marsh (www.ecolinc.vic.edu.au).

Ecolinc offers a range of whole day VCE Environmental Science SAC

programs. In 2012 Ecolinc will offer a new VCE SAC program for Unit 1 AoS 1 & 2

Ecological components and interaction/ Environmental change. This program

will involve the analysis of samples

for nitrogen containing compounds,

with links to the nitrogen cycle and the

determination of a range of soil properties

to determine susceptibility to erosion and

nutrient levels. This program will include

an investigation of revegetation and

management strategies for the Werribee

River. This session will overview all of

Ecolinc's VCE Environmental SAC programs

including Unit 1 The Environment, Unit

2 Monitoring the Environment, Unit 3

Ecological issues and Unit 4 Ecological

sustainability.

Suitability: VCE Units 1-4

Extension Education

Not repeated

Meet the Assessor - Hugh Latimer

3:00pm to 4:00pm

VCE Biology and Environmental Science Teachers' Conference 2012

Morning Tea/Displays
10:15am to 10:45am

Session A

10:45am – 11:45am

A1 Using Technology in the Biology Classroom

Helen Silvester, Mentone Girls Grammar School

We all need to keep up to date in the Biology classroom and there are many ICT activities on offer, from animations on PowerPoint, to industry sites, and apps on an iPad. This session will look at just some of those available, and how to use them in the Units 1-4 Biology.

Suitability: VCE Units 1-4

Not repeated

A2 Climate Change – New science, Old Arguments

Keith Burrows, AIP Ed Com (Vic)

Since the 2007 IPCC report climate science has progressed a long way, and yet according to some people 'climate science is crap'. How is it that although the science is actually well established the public perception of it seems to be quite the opposite? The answer of course is that it is being badly misrepresented in the media. The purpose of this session is to try to bring you the latest developments in climate science and to give sound science based answers to much of the nonsense that we hear 'out there' in the public arena.

Suitability: All

Extension Education

Repeated as C4

A3 Computational Biology in Victoria – Some Stories for Your Students

Helen Gardiner, Victorian Life Sciences Computation Initiative

Medical imaging, genomics, structural biology, integrated biological systems, bioinformatics and health informatics are all impacting on research questions and methods. Massive amounts of data are being generated and we need big teams of people who understand both biology and computer science to mine this data. Employment prospects are hot. This session will give you a range of stories to take back to the classroom, putting what is being studied in a global context.

Suitability: All

Extension Education

Repeated as B4

A4 Investigating Biology at Ecolinc **Suzanne Clark & Jacqui Slattery, Ecolinc**

Ecolinc is a Department of Education and Early Childhood Development (DEECD) Science Specialist Centre situated in Bacchus Marsh (www.ecolinc.vic.edu.au). Ecolinc offers a range of whole day VCE Biology SAC programs. In 2012 Ecolinc will offer a new VCE SAC program for Unit 4 AoS 2 Change over time, which will include the use of protein electrophoresis to generate protein profiles from the muscles of distantly and closely related fish species. Profiles will be compared to test the hypothesis that protein profiles can be indicators of evolutionary relatedness. This session will overview all of Ecolinc's VCE Biology SAC programs including Unit 1 Unity and Diversity, Unit 2 Organisms and their environment, Unit 3 Signatures of Life and Unit 4 Continuity and change.

Suitability: VCE Units 1-4

Extension Education

Repeated as B5

A5 VCE Immunology

Cathleena McLaren & Elke Barczak, CSIRO Education Victoria

Designed to help meet the requirements of VCE Biology Unit 3, this engaging workshop explores the immune system with practical activities designed to provide experience and understanding of immunological processes. Participants use electronic multi-channel micropipettes to investigate the specific and non-specific immune systems through the use of an Enzyme-Linked Immunosorbent Assay (ELISA). Participants will also use a blood typing assay to investigate how the immune system distinguishes 'self' from 'non-self'.

Suitability: VCE Unit 3

Extension Education

Not repeated

A6 Teaching Emerging Technologies Made Easy

Jason Major, TechNyou

Have you used Biotechnology Online or Access Nano? Did you enjoy the experience? Well now the two resources have been merged into one brand new resource. It still has the same quality information, teacher notes, class activities, lab pracs, animations, videos, audio and interactives, but it's all updated, refined with new features and functionality, and aligned with the Australian Curriculum. Teachers will get a tour of the resource, have time to explore it themselves and participate in some of the interactive class activities the resource has to offer.

Suitability: Years 7-10

Extension Education

Repeated as C6

A7 Biology for Interactive Whiteboards, Laptops and Computer Labs

Michael O'Brien, Newbyte Educational Software

Interactive Whiteboards and student laptops are a coming trend in education, however finding good biology programs and using them effectively is a problem. This hands-on workshop will give you some great practical ideas for using this new technology in your biology classroom. During the workshop we will examine several software packages including those from Newbyte, Sunflower and others. Use the new Natural Selection and Evolution Series. Receive FREE trial CD and someone will win a full version of one package. Look for our 'Ecology for Interactive Whiteboards...' and 'Genetics for...' workshops at this conference.

Suitability: VCE Units 1, 3 & 4

Commercial Presentation

Not repeated

A8 Make it real! Stimulating Technology for the Biology classroom **Phil Jones, The Logical Interface**

Sophisticated technology is now within the reach of every science educator. In this workshop I examine a number of such technologies that excite students and bring a sense of relevance to learning science. These include:

Digital imaging and microscopy which provide a cost effective way of stimulating students and introducing them to new experiences such as forensic science and technology based research. Sophisticated software allows students to do calibrated measurement and counting as well as capture video and time-lapse video. New developments in data loggers. The new generation of educational data loggers makes data logging easier and more accessible. Combine this technology with Netbook PCs and data loggers become a powerful and essential tool for science education.

Strategies for collecting data in the field – when to use data loggers and when to use alternative instruments.

Suitability: All

Commercial Presentation

Repeated as B8

A9 StudyON for VCE Biology - Want to Improve Your Students' Exam Results?

Neale Taylor, John Wiley and Sons Pty Ltd

In this hands-on workshop you will explore StudyON for VCE Biology Units 3 & 4 and our new StudyON Teacher Edition. StudyON is Jacaranda's online study,

revision and exam practice tool which lets you:

Track the progress of your students throughout the year at an individual, group or class level.

View each student's online performance on actual past VCAA exam and practice questions.

StudyON incorporates videos, animations, interactive study activities and a results tracker. You will receive complementary packs of studyON Biology 3 and full access to StudyON Teacher Edition for 12 months.

Suitability: VCE Units 3&4

Commercial Presentation

Repeated as C8

Session B

12:00pm – 1:00pm

B1 Authentic Learning Activities in Year 11 Biology

Claire Stanner, The King David School

Penelope Dumsday, Camberwell Girls

Grammar School

Chalk-and-talk does not have to be the staple teaching tool for Year 11 Biology.

This session will explore the use of activities, simulations and modelling as a means for constructing authentic learning activities in the classroom. The selection and implementation of these activities to ensure increased student engagement and learning will be discussed. Activities for both Unit 1 and 2 will be included.

Suitability: VCE Units 1&2

Not repeated

B2 Quick and Easy ICT Ideas to Spunk Up Your Unit 3 and 4 Biology Class

Tori Shaw, Carey Baptist Grammar School

Need something to break up your Year 12 Biology lesson but too worried it will stray from the content you are already hard pressed to get through? This session is designed to provide you with some ideas on how to keep focussed on the curriculum but use ICT as a learning tool. Including animations, Youtube clips, online activities, making your own animations, online tutorials, etc. If you would like to add some smiles to your classes, come along and see these resources in action. All resources have been collected over the last year or so from a range of forums.

Suitability: VCE Units 3&4

Repeated as C2

B3 Get into Genes – Applications of Gene Technology and Research Stories for the Classroom

Joanna Oreo, Get into Genes

Come and explore the latest applications of gene technology from the Dairy Futures CRC and the Australian Centre for Plant and Functional Genomics. This session will be presented in a manner complementary to both students and teachers' learning objectives. It will contain contextual examples of key knowledge requirements for VCE Biology and the National Curriculum (e.g. genomics and phenomics, issues around GM and non-GM applications of gene technology) and aid in the teaching of biotechnology.

Suitability: VCE Unit 4

Repeated as C3

B4 Computational Biology in Victoria - Some Stories for Your Students

Helen Gardiner, Victorian Life Sciences

Computation Initiative

Suitability: All

Extension Education

Repeat of A3

B5 Investigating Biology at Ecolinc

Suzanne Clark & Jacqui Slattery, Ecolinc

Suitability: VCE Units 1-4

Extension Education

Repeat of A4

B6 Human Evolution Student Workshop

Jim Abbott & Jonathan Shearer, Museum Victoria

In this session teachers will participate in a demonstration of a workshop offered for students at Melbourne Museum during the latter part of Term 3. The program is intended to introduce students to some of the concepts covered in VCE Biology Unit 4 and in particular hominid evolution. Participants will have the opportunity to handle replica skulls of a variety of hominids and complete some of the activities done by students in the workshop using iPads.

Note: iPads will be provided on the basis of one per two participants.

Suitability: VCE Unit 4

Extension Education

Not repeated

B7 Ecology for Interactive Whiteboards, Laptops and Computer Labs

Michael O'Brien, Newbyte Educational Software

Simulation software can bring your ecology class to life, particularly when used in conjunction with project-based learning and/or an excursion. Experience 'Rocky Shore Ecology', 'Food Webs Australian Woodlands' and 'Food Webs Ponds'; see how they can help your class understand ecology. This hands-on workshop will give you some great practical ideas for your students. Learn about the hidden features and full potential of these programs.

Receive a FREE trial CD and someone will win a full version of one of these packages.

Look for our 'Biology for Interactive Whiteboards...' and 'Genetics for...'

workshops at this conference.

Suitability: VCE Unit 2

Commercial Presentation

Not repeated

B8 Make it real! Stimulating Technology for the Biology classroom

Phil Jones, The Logical Interface

Suitability: All

Commercial Presentation

Repeat of A8

**Lunch/Displays
1:00pm to 1:45pm**

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Session C

1:45pm – 2:45pm

C1 Tick, Tock – 'Timely Teaching Tools' To Beat The Clock!

Merrin Evergreen, St Leonard's College

Tick tock... can you beat the clock?

Teaching Units 3 and 4 VCE Biology can be very stressful to both students AND their teachers. So many new words, so much content and so little time for the students to learn it all well enough to be able to transfer their learning into the new and unfamiliar situations in their formal examinations. In this session, a variety of teaching procedures will be introduced that can be used in your classrooms to support learning, reduce stress and help you (and your students) to beat the 'examination clock'.

Suitability: VCE Unit 3

Not repeated

C2 Quick and Easy ICT Ideas to Spunk Up Your Unit 3 and 4 Biology Class

Tori Shaw, Carey Baptist Grammar School

Suitability: VCE Units 3&4

Repeat of B2

C3 Get into Genes – Applications of Gene Technology and Research Stories for the Classroom

Joanna Oreo, Get into Genes

Suitability: VCE Unit 4

Repeat of B3

C4 Climate Change - New science, Old Arguments

Keith Burrows, AIP Ed Com (Vic)

Since the 2007 IPCC report climate science has progressed a long way, and yet according to some people 'climate science is crap'. How is it that although the science is actually well established the public perception of it seems to be quite the opposite? The answer of course is that it is being badly misrepresented in the media. The purpose of this session is to try to bring you the latest developments in climate science and to give sound science based answers to much of the nonsense that we hear 'out there' in the public arena.

Suitability: All

Extension Education

Repeat of A2

C5 Biodiversity Snapshots

Jim Abbott & Jonathan Shearer, Museum Victoria

Biodiversity Snapshots is a free resource that will help your students learn more about the animals around us every day by combining mobile technology and science. We provide you with a field guide, identification tool and way for students to record their observations all on a mobile device – a phone, netbook, or tablet. They will make the observations and participate as a citizen scientist.

The session will cover how to register, add a class and create a survey, as well as how to use the identification tool when in the field.

Suitability: All

Extension Education

Not repeated

C6 Teaching Emerging Technologies Made Easy

Jason Major, TechNyou

Have you used Biotechnology Online or Access Nano? Did you enjoy the experience? Well now the two resources have been merged into one brand new resource. It still has the same quality information, teacher notes, class activities, lab pracs, animations, videos, audio and interactives, but it's all updated, refined with new features and functionality, and aligned with the Australian Curriculum. Teachers will get a tour of the resource, have time to explore it themselves and participate in some of the interactive class activities the resource has to offer.

Suitability: Years 7-10

Extension Education

Repeat of A6

C7 Genetics for Interactive Whiteboards, Laptops and Computer Labs

Michael O'Brien, Newbyte Educational Software

Interactive whiteboards and good software can help your students understand emerging technologies and difficult concepts. This workshop will give you some great practical ideas on how to integrate modern technologies into your teaching. You'll have the chance to use genetics software developed in Australia and Sweden. Explore how these resources can be used effectively in various teaching situations. Receive a FREE trial CD and someone will win a full version of a package. Look for our 'Biology for Interactive Whiteboards...' and 'Ecology for ...' workshops at this conference.

Suitability: VCE Unit 4

Commercial Presentation

Not repeated

C8 StudyON for VCE Biology – Want to Improve Your Students' Exam Results?

Neale Taylor, John Wiley and Sons Pty Ltd

Suitability: VCE Units 3&4

Commercial Presentation

Repeat of A9

C9 BIOZONE Showcase their New DIGITAL Titles for Year 11 & 12 Biology Richard Allan - Biozone Learning Media Australia

BIOZONE's popular Year 11 & Year 12 Biology Student Workbooks are now in 2 colour and also available as iPad eBooks. The Publisher will highlight exciting new changes in the latest editions, including new activities, fresh two colour format, and a more direct questioning style that provides greater opportunity for problem solving within relevant contexts. The Publisher will also demonstrate the newest title in the Presentation Media series: Anatomy & Physiology, as well as iPad/iPod versions for your students. A selection of FREE workbook samples will be provided to each workshop attendee.

Suitability: All

Commercial Presentation

Not repeated

**Meet the Assessor - Hugh Latimer
3:00pm to 4:00pm**

**Conference ends
4:00pm**