
# THIS VIEW OF LIFE
## Information for Teachers

Thank you for booking your school on to *This View of Life*. This pack will tell you what to expect on the day, has some follow up activity ideas and gives some recommendations for websites where you can learn more about Darwin and evolution or explore more teaching ideas on the topic.

This pack is also available to download from the TAG Theatre, National Library of Scotland and Huntarian Museum websites.

### WHAT TO EXPECT ON THE DAY

*This View of Life* is an interactive theatre experience that will take a full day, starting at 10.00am. Together your class will look at the world through Darwin's eyes to discover his View of Life, learning that by observing nature we can discover how it works, and that hidden in the detail of today's wildlife is the story of the earth's past.

We'll learn a bit about Darwin, explore some of the places and things that he observed on his voyages on The Beagle, then travel even further than Darwin did to discover some of the weird and wonderful creatures that lived on earth in the past, and find out what happened to them.

With TAGs experienced actors and facilitators your class will spend the morning doing some whole class and smaller group introductory activities. In group activities they will learn about different ideas from the play with a facilitator and work together to develop a key scene to be performed later in the day.

You will have a 45 minute lunch break with space available at the venue.

The play will be performed in the afternoon and lasts approximately one hour. In the play your pupils will be transported back in time with the 'This View of Life' time machine, visiting key moments in earth's history with Darwin himself to discover the story of our planet and be encouraged to think about our responsibility to protect it. Your group will be part of the play so that together the class will discover, and introduce to each other, the ideas of variation and natural selection.

The play will finish at approximately 2.30pm and we recommend a 2.45pm pick up for coaches. All teachers who visit, and their colleagues are also invited to an evening CPD session to learn more about the development of the play, the themes it explores and drama teaching techniques for exploring Darwin and evolution.

## CONTINUING PROFESSIONAL DEVELOPMENT

CPD sessions will be run on the following dates:

**Wednesday 30 September** 3.30 – 5pm
at the Hunterian Gallery and Museum, Glasgow

**Thursday 29th October** 3.30 – 5pm
at the National Library of Scotland, Edinburgh

For more information on the CPD please visit the TAG website
**www.tag-theatre.co.uk**


## PLEASE NOTE

You won't need to bring anything with you – all equipment is provided at the venue, but do remember that your pupils will be participating in active drama workshops so should wear **comfortable clothes** and **sensible shoes**!

It would be very helpful if you could **divide the full group** of pupils attending the play **into 4** before your visit groups (e.g. if bringing two classes 2 groups per class).

TAG CITIZENS THEATRE nls National Library of Scotland North Lanarkshire Council University of Glasgow The Hunterian

## SOME SUGGESTED FOLLOW-UP ACTIVITIES

Dawin used his creativity and inventiveness in his approach to science, observing the world closely and developing his own view of life which became the theory of evolution. The activities in this pack are designed to use pupil's own creativity and inventiveness to develop some of the key themes explored in *This View of Life*.

There are three activities in this pack which can be run as lessons or mini projects over a number of lessons:

- **What does it mean to be alive?**
- **Victorian Science Detectives**
- **Suited to your Environment...**

They can be run separately or as a set of three.

You will not find background scientific information here, but the 'Additional Sources of Information' section below directs you to some useful websites to learn more about these areas, provide additional teaching resources and games.

When you attend the play TAG staff will provide you with an overview of the day and outline of the drama activities for you to use and adapt for your own use in the classroom.

## CURRICULUM LINKS

Activities are designed to apply skills developed in the Creative Arts and Literacy and Social Wellbeing Outcomes. The themes explored have a close link with the Biodiversity and Interdependence Outcome for the Sciences:

> I can identify and classify examples of living things, past and present, to help me appreciate their diversity. I can relate physical and behavioural characteristics to their survival or extinction.

This is a key feature of Darwin's theory of Natural Selection by evolution. In addition, we hope that these activities will help pupils begin to recognise the role of creativity and inventiveness in the development of the sciences.

The project explores Charles Darwin's View of Life, and the scientific theories which have been developed following his work to understand our world. However, the day is entirely suitable for pupils of multiple faiths, does not deny the existence of a deity and is designed to encourage young people to explore their own beliefs.

**For more detail of links to the Curriculum for Excellence outcomes in various subjects, please see the section at the end of this pack.**

## ACTIVITY 1 WHAT DOES IT MEAN TO BE ALIVE?

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| **What's this lesson about?** | In the play we explored what it means to be alive from a scientific perspective and that all living organisms are unique.<br><br>Some things are alive and some things are not. Being 'alive' can be defined in scientific terms, like the ways it was defined in *This View of Life*, but it can also be used as a springboard for discussing pupils' values and identities.<br><br>Pupils will be encouraged to think about what it means to them to be alive and what makes them unique using creative media. This series of activities leads from a discussion of what is and is not alive to the creation of a 'Map of Me' which can be used as the basis of a discussion or further work on pupils' unique values, personalities and strengths. |
| **Key theme in *This View of Life*** | • Being alive.<br>• All living organisms are unique. |
| **Learning Outcomes** | Pupils will recognise that:<br><br>• I am unique physically and emotionally<br>• Some things are alive and some things are not<br>• Different animals are suited to different environments<br><br>This lesson will develop skills in discussion, imaginative creative writing, drawing and art, team work, critical and creative thinking. |
| **Resources Required** | • Cards with pictures of 'living' and 'non-living' items selected yourself but to include a range of different organisms in the 'living' group from a range of environments, e.g. tiger, snail, shark, penguin, clown fish, bush baby, hamster, spider, venus fly trap and huge oak tree, desert cactus. You can make this activity simple by choosing e.g. mammals and plants or more challenging by including a wider variety of things e.g. bacteria, single-celled organisms, sea monkeys, insect eating plants etc.<br>• Whiteboard and pens.<br>• Pens, pencils and art materials.<br>• Large sheets of paper, e.g. lining wallpaper rolls. |
| **Refresher: What is alive?** | This is a quick refresher activity to link back to learning outcomes at the First Level of A Curriculum for Excellence and group activities in *This View of Life.*<br><br>Explain to the class that they are going to divide a group of cards into living and non-living organisms. This should be a group activity – the whole group must decide if each card is 'alive' or 'not alive' and why they think this.<br><br>Before you start, get the class to discuss what criteria they will use to decide what is alive and what is not. Encourage the group towards practical criteria, if possible ending with three key factors:<br><br>1. **Does it eat?** *(discuss e.g. that trees and fungi 'eat' by absorbing nutrients and water from the earth)*<br>2. **Does it reproduce - or can it have babies**? *(discuss e.g. that trees and flowers reproduce using seeds)*<br>3. **Does it breathe?** *(discuss e.g. that trees and plants absorb oxygen through their leaves.)*<br><br>It is likely that during discussion some pupils might suggest criteria relating to emotions or personality, if this happens explain that though these are things that are experienced by living organisms they are difficult to classify by but will be considered in 'What does it mean to be alive?'<br><br>Show each card in turn, and ask the class to agree whether what it shows is alive or not, for everything they decide is 'alive' they must be able to prove it using their selection criteria.<br><br>When the group have agreed what is alive and what is not, discard the 'not alive' pile and focus on the 'alive' pile. This is where we will start considering what it means to be alive. |

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| **What does it mean to be alive?** | Divide the class into groups and give each group one card from the 'alive' pile. Ask them what it would be like to be alive as the organism on their card. Encourage them to consider the following:<br><br>1. Where does the organism live and how? e.g. does it live alone or in a family or pack group, what does it eat, is it a carnivore or is it hunted by carnivores. How long does it live? How much to they know about it?<br>2. What makes a tiger a tiger? Consider what attributes their organism has that makes it well suited to its environment (e.g. a tiger has stripped fur for camouflage, strong claws and teeth, strong legs to run). Does it have any disadvantages?<br>3. Imagine they are the organism on their card- what would their life be like. Would it be easy or hard, lonely or sociable, would they be happy or frightened? What would they enjoy about being a tiger, penguin etc – and what would they not? What would they do? (e.g. encourage pupils with a plant to be imaginative – if a plant had feelings what would if be like? A venus fly trap might be bored being very still, impatient waiting for a fly to land on it then the rush of excitement when it caught something… An ancient oak tree might be home to lots of other plants and animals that it watches, but would have a very long life and have seen many changes)<br><br>When the groups have finished, bring them back together and get each group to tell the class about life as their organism. Highlight that all the organisms are different but all have strengths that make them suited to their lives.<br><br>***Optional follow-up:***<br>*You may wish to continue exploring this theme with creative writing and art activities. e.g. collage or drawing animals, factual or creative writing about life as a tiger, tree etc.* |
| **A Map of Me** | Bring the discussion round to humans – ask the group to consider question 1 and 2 about humans.<br><br>Conclude by leading the group into a discussion about what being alive means to them: what do they enjoy, what inspires them, what is important in their lives etc. It is likely that the group will come up with some similar ideas and some that are unique to one person – highlight this to the class.<br><br>This will lead into an individual activity which can be run in class with some supporting homework activity: **A Map of Me**. Before they start they will need to consider what makes them unique.<br><br>1. Ask pupils to create a mind map titled 'Recipe for Me'. Ask them to write down all the things that make them unique on it – considering 6 key themes: physical characteristics, family, friends, interests, values, personality. (This could be run as a home work activity).<br>2. **Either** have each pupil to lie down on a long sheet of paper/wall paper and select another class member to draw around them – give each pupil their outline **Or** just draw around pupils' head and shoulders in profile **Or** on an A2/A1 piece of paper get all pupils to draw a simple outline drawing of themselves.<br>3. Get each pupil to divide their outline body drawing into six sections called<br>- Physical characteristics<br>- Family<br>- Interests<br>- Values – what is important to them?<br>- Personality<br>- Friends<br>4. Each pupil should draw and write the things that make them unique (as identified in the mind map) to create their 'Map of Me'. You might want to do this in a variety of ways e.g. just using writing; using drawings and writing; using collages by getting pupils to collect images and photos that demonstrate the things they want to 'map' about themselves – pupils could collect from home.<br><br>Upon completion, you should have a whole set of maps to display and use as a stimulus to discuss that each pupil is physically and emotionally unique and can use their unique qualities to contribute to their own development and to working together in the class/ school/community. |

## ACTIVITY 2 VICTORIAN SCIENCE DETECTIVES

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| **What's this lesson about?** | In the play we discovered that Darwin, like other Victorian scientists used close observation of the natural world around him to help understand the history of our world. For example, Charles Lyell observed the ways in which rain, sun and erosion could have a great impact on the geology of the world, and Charles Darwin observed the ways in which organisms are suited to their environment and could change over time.<br><br>Darwin kept many notebooks in which he recorded his observations of the natural world and made notes of his theories and ideas about nature and evolution.<br><br>Close observation and careful recording was not only important because it let them observe nature, it also enabled them to explain what they had observed to other scientists. In this lesson plan your class will become Victorian Science Detectives too, going out to observe the natural world, making notes like Darwin and sharing what they have discovered with the class. |
| **Key Theme in *This View of Life*** | • Exploring Darwin's View of Life<br>• Living organisms have characteristics that are adapted to the environment they live in |
| **Learning Outcomes** | Pupils will recognise that:<br><br>- Close observation can tell us a lot about an environment and the organism that live in it<br>- Research can tell us even more about the creatures we see<br>- Organisms have tiny features which make them suited to their environment<br>- Organisms in a common environment have common features and may be interdependent.<br><br>This lesson will develop skills in discussion, observation, drawing and art, research, team work. |
| **Resources Required** | Magnifying glass, plastic boxes/ bug collection kits (available at e.g. Amazon and Hope Education); digital cameras, clipboards pens and paper. |
| **Nature explorer** | Divide your class into pairs and take them out into a local environment. This might be your school playing field or nature garden (if you have one). Or you might want to go to a natural environment close to your school e.g. beach, woodland area etc.<br><br>In their pairs pupils should explore their environment together and identify one sample plant or animal which they would like to learn more about. For their example they should:<br><br>- take a photograph(s) of it in its natural environment to collect as much evidence as they can about where it lives<br>- make a note of exactly where they found it.<br>- collect a sample to bring back the class room (if possible!!) e.g. a leaf from a tree, a flower from a plant, a snail shell, a beetle. Remember, teachers should assist pupils in getting live samples and if you take bugs as samples you must return them to the wild when the activity is finished!<br>- observe it closely in its natural environment and make notes and drawings on what they observe – what does it look like?, where did they find it? How big is it? Was it common or did they only see one? What else did they notice about the environment etc?<br>- Discuss – do they know what it is or not? If they don't, what other evidence and observations will they need to make to take back to the classroom and identify it there?<br><br>When finished bring the samples and notes back to the class room. Try and make sure the class has a variety of different sample plants and animals.<br><br>Note that any drawings the pupils make at this stage should be simple, they should be aiming to observe and make note of as much evidence as they can of their sample and its environment – so simple sketches that will provide them with information when back in the class room are good.<br><br>You might wish to give the groups different tasks or themes to explore, e.g. one group to explore plants, one to find birds, one to find bugs etc. |

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| **Nature explorer** continued | *Background note: When he was on his voyage on the Beagle, Darwin sometimes didn't make a note of where he found his samples which made it harder for him to study them later. So later in life he always used notebooks to make careful observations about what he saw in nature and where he found it.* |
| **Observation** | Back in the class room each pupil should now observe and learn about their sample in more detail. If they have brought samples they could not identify in the field they should now use nature books and the internet to identify them.<br><br>They should:<br><br>1. Draw it as carefully as possible and in as much detail as possible. As they draw encourage them to look carefully of their sample and think about why they might be that way. This should be a different process from the sketches made in the field, focussed on close and detailed observation and recording detail as accurately as they can, for example you might want to encourage them to use magnifying classes to look closely at the details as they draw. When they have done this ask them if there is anything they noticed that they had not noticed before.<br>2. Find their sample in a nature book and read about it, making a note of 4 key characteristics of the creature that make it suited to its environment, diet etc (e.g. a bird might have a specific beak shape to help it eat seeds, camouflage markings on its wings, has light bones to help it fly). In particular ask them to try and find out more about the thing they noticed when drawing it carefully.<br>3. Use their drawing and the notes, photographs and drawings they have made throughout the process each pupil should create a fact file for their sample – a single A3 page with their picture and recording all the observations and facts they have discovered about their sample and how it is adapted to its environment. |
| **Presentation and thinking about adaption** | In groups (split pairs), each pupil should introduce their sample, why they picked it and explain what makes it suited to its environment to their group, using their fact file page to support them.<br><br>As a group they should discuss:<br><br>• What makes their samples the same or similar? What characteristics they share, e.g. colour, number of legs etc. (some things might not be similar at all).<br>• What makes them **most** different to each other?<br>• Are there any relationships between the different samples? For example is one food for another? Is one home to another?<br>• How well is each one suited to its life and environment?<br><br>As a group they should imagine that they can add, adapt or change one thing about each animal/plant – what would they do and why would it be a benefit? Would it be a good or bad thing and would it work? Encourage them to think practically and develop a change that is practical for the creature's environment.<br><br>***Optional follow-up:*** *you may wish to use the fact files to create a wall display demonstrating the natural biodiversity of and ways plants and animals are adapted to the environment you explored.* |

## ACTIVITY 3 SUITED TO YOUR ENVIRONMENT

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| **What's this lesson about?** | In the play we discovered past environments, the creatures that lived in them and why they were successful/unsuccessful. This art and design activity briefly explores some modern environments then encourages pupils to use their imagination to create future environments and the creatures we might encounter there. |
| **Key Theme in This View of Life** | • Adaption to environment enables survival. |
| **Learning Outcomes** | Pupils will recognise that:<br>• Different animals are suited to different environments<br>• Organisms in an environment are interdependent<br>• In mass extinction events, only those creatures most suited to the environment after the event will flourish.<br>This lesson will develop skills in discussion, drawing and art, team work, critical and creative thinking. |
| **Resources Required** | Art materials and paper. |
| **Environments today?** | Discussion activity: divide the class into groups. Get each group to identify 5 different animals or plants that live in the following environments:<br>• The Jungle<br>• The Desert<br>• The City<br>• The Beach<br>They should discuss what features make them suited to this environment (as in previous activities). |
| **Future Environments** | Each group should work together to create a collage background for imagined alien planet environment that they create themselves.<br>Encourage the groups to be imaginative but also practical – for example they might create a hot fiery planet with lots of volcanoes and lava floes, or an ice planet, or a swamp planet – but in each case they need to create an environment where things could live!<br>Whilst they are designing their environment they need to thing about the details e.g. is it hot or cold? What are the weather conditions like? What kinds of plants are there? Are there many and can they be eaten? Where are the water sources? What is the atmosphere – air or some other gas? |
| **What Lives Here?** | Now it is time to populate the environment. Each group should now design alien animals to live in their alien planet environment:<br>As a group pupils should discuss the creatures which might exist and flourish here.<br>Then as an art and design activity pupils should make an alien creature each (drawing or collage) and cut them out to add to their planet.<br>Encourage them to think creatively and develop the unusual:<br>• Creatures they discuss and invent might have similar features to animals you find in similar environments on earth or they might have very different features. What would make them perfectly suited to where they live? Encourage pupils to combine what they know with something completely new that might help their creatures live, move, find food etc.<br>• Also encourage practical thinking about adaption and relations between organisms. Food should be a constant theme – pupils should bear in mind the food sources for everything they invent - who eats what - or who!?<br>• There are many other things pupils should then move on to consider, e.g. How do small animals protect themselves from predators? How are the pupils' inventions adapted to their environment? If their future environment is on earth have any of their creatures/plants evolved from ones we see today? |

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| **What Lives Here?** continued | Encourage pupils to name and describe their imagined creatures.<br><br>If you feel your class might need inspiration you could provide images of real animals and alien creatures invented for TV and film. |
| **Disaster!** | End with a discussion activity, each group should introduce their environment and the animals in it to the class.<br><br>Then as a class discuss what would happen if a disaster struck their environment e.g. sudden flood, ice age, meteor hit etc. What would happen and who would survive and why?<br><br>You could link this back to theories about the extinction of the dinosaurs, earth's ice ages etc. |

## OTHER SOURCES OF INFORMATION

There are many websites which can be sources of useful information, and many have useful online teaching resources too. Here are just a few:

**Find out more about Darwin and Evolution**

- The John Murray Archive at the National Library of Scotland holds many papers relating to the story of the publication of *On the Origin of Species* by Charles Darwin, which inspired the writing of 'This View of Life'**: www.nls.co.uk/jma**
- Darwin 200 gives an overview of all the different events and activities happening across the uk to celebrate Darwin's work in 2009, and also includes a section about his life and work, including links to useful resources about evolution: **www.darwin200.org**
- The BBC has created a site which includes information about the programmes and resources they have produced about Darwin: **www.bbc.co.uk/darwin**
- The Darwin Correspondence Project is run by Cambridge University and aims to put all of Darwin's correspondence online, note teaching resources are designed for undergraduates: **www.darwinproject.ac.uk**
- The Natural History Museum has a web feature about Darwin and evolution,: **www.nhm.ac.uk/nature-online/evolution**
- The Open University has a number of resources about Darwin and Evolution including a Darwin website, **www.open.ac.uk/darwin** and a short online course **http://openlearn.open.ac.uk/course/view.php?id=1646**.

*There are also a number of sites with resources and activities for schools relating to Darwin:*

- Kew Gardens is running The Great Plant Hunt which includes teaching resources and activities: **www.greatplanthunt.org/teachers**
- Research Councils UK have put together a website which includes simple online demonstrations and games about evolution and natural selection: **www.darwin.rcuk.ac.uk**

**Find out more about some of the other topics explored in 'This View of Life'**

- The Galapagos Trust has been set up to promote the conservation of the Galapagos Islands, their website provides useful information about the islands and includes a section for young people: **www.savegalapagos.org**
- The BBC has a mini site about prehistoric life, including dinosaurs: **www.bbc.co.uk/sn/prehistoric_ life**
- American TV Network PBS has a feature on Burgess Shale and evolution: **http://www.pbs.org/wgbh/evolution/library/03/4/l_034_02.html**
- The Inside DNA website supports an exhibition touring UK science centres: **www.insidedna.org.uk**

# CURRICULUM FOR EXCELLENCE LINKS

## SCIENCE

**Introductory Statements for sciences:**
Learning in the sciences will enable me to:

- develop curiosity and understanding of the environment and my place in the living, material and physical world.
- demonstrate a secure knowledge and understanding of the big ideas and concepts of the sciences.
- recognise the impact the sciences make on my life, the lives of others, the environment and on society.
- recognise the role of creativity and inventiveness in the development of the sciences.
- express opinions and make decisions on social, moral, ethical, economic and environmental issues based upon sound understanding.
- develop as a scientifically-literate citizen with a lifelong interest in the sciences.

### Biodiversity and Interdependence

***First Level (by P4)***

- I can distinguish between living and non living things. I can sort living things into groups and explain my decisions.

***Second Level (by P7)***

- I can identify and classify examples of living things, past and present, to help me appreciate their diversity. I can relate physical and behavioural characteristics to their survival or extinction.
- I can use my knowledge of the interactions and energy flow between plants and animals in ecosystems, food chains and webs. I have contributed to the design or conservation of a wildlife area.
- Through carrying out practical activities and investigations, I can show how plants have benefited society.

***Third Level (S1-S3)***

- I have collaborated on investigations into the process of photosynthesis and I can demonstrate my understanding of why plants are vital to sustaining life on earth.

***Fourth Level (S1-S3)***

- I understand how animal and plant species depend on each other and how living things are adapted for survival. I can predict the impact of population growth and natural hazards on biodiversity.

### Inheritance

***First Level (by P4)***

- By comparing generations of families of humans, plants and animals, I can begin to understand how characteristics are inherited.

## SOCIAL SCIENCES

### People, Place and Environment

***First Level (by P4)***

- By exploring a natural environment different from my own, I can discover how the physical features influence the variety of living things.

***Second Level (by P7)***

- I can describe the physical processes of a natural disaster and discuss its impact on people and the landscape.
- I can discuss the environmental impact of human activity and suggest ways in which we can live in a more environmentally-responsible way.

## SOCIAL WELLBEING

***First and Second Levels***

- I recognise that each individual has a unique blend of abilities and needs. I contribute to making my school community one which values individuals equally and is a welcoming place for all.

## LITERACY AND ENGLISH

### Writing

***First and Second Levels***

- I enjoy creating texts of my choice and I regularly select subject, purpose, format and resources to suit the needs of my audience.

### Listening and Talking

***First Level (by P4)***

- When listening and talking with others for different purposes, I can exchange information, experiences, explanations, ideas and opinions, and clarify points by asking questions or by asking others to say more.

## EXPRESSIVE ARTS

### Participation in Performances and Presentations

***First and Second Levels***

- I have experienced the energy and excitement of presenting / performing for audiences and being part of an audience for other people's presentations/ performances.

### Art and Design

***Second Level (by P7)***

- Through observing and recording from my experiences across the curriculum, I can create images and objects which show my awareness and recognition of detail.

***First and Second Levels***

- Inspired by a range of stimuli, I can express and communicate my ideas, thoughts and feelings through activities within art and design.

## RELIGIOUS AND MORAL EDUCATION

### Development of Beliefs and Values

***First, Second, Third and Fourth Levels***

- I am developing an increased awareness and understanding of my own beliefs and I put them into action in positive ways.