F A C T

Journal for the support
and development
of content and language
integrated learning
(CLIL)

Introduction FACT 16

A cold winter (at least in Bulgaria :)) but we've got a hot Journal for you!

The excitement is due to the variety of interesting topics related to and dedicated to young learners and their education in science.

A report on science investigations 'Teaching Science to Very Young Learners in English' is offered by Keith Kelly and Mark Bowering from Anglia School in Plovdiv.

Lucky readers get the entire investigation and exchange project 'Plants In Our Lives' from Science Across the World. If you like plants, get your learners investigating plants around them with these resources!

An informative report on technology in education is presented with 'Building Digital Bridges in education and training' By NikolinaTsvetkova and this is closely followed by a description of an approach to learning science for children making use of the world around them: Tales from the invisible web of life with adventurous atoms for you (here you can see three with more coming in the next issue).by Stoyan Faldjiyski. There is a lesson activity with 'Feathers' by Stefka Kitanova and this is followed by some thoughts about recycling – and even in two languages: Рециклирането от Мария Лазарова, Reciclaje de Maria Lazarova – just to make the issue (and its readers) trilingual.

Enjoy a warm Journal in the cold winter!

Keith and Stefka

# Teaching Science to Very Young Learners in English.

By Keith Kelly (keithpkelly@yahoo.co.uk) and Mark Bowering (bkram@icloud.com)
www.anglia-school.info

> Q - Is it even possible to teach Science in English as a foreign language to very young children?
> A - Yes. It is a perfect context for developing both the foreign language and the concepts and skills for science.

This short article describes the introduction of science investigations and experiments for young children from the age of 3 to 10 at Anglia School. The aim of the piece is to suggest that science is a perfect context for developing foreign language skills in young children. The reason for this is that young children are programmed to explore the world around them. They are natural scientists from the word go. All we need to do is embrace this phenomenon in the classroom and set up learning activities and opportunities which give children a structured opportunity investigate with scaffolded meaningful language.
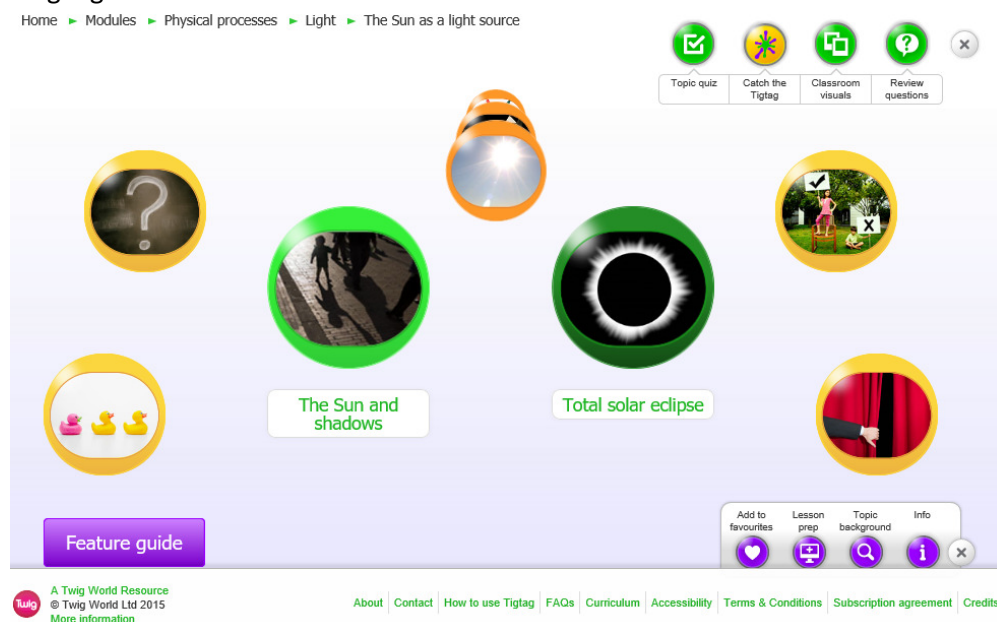
(www.tigtagworld.co.uk)

This article offers 10 reasons why science is the perfect medium for developing English as a foreign language in young children. There is also an appended write-up of an investigation carried out at Anglia School written by teacher Mark Bowering. Many thanks go to www.tigtagworld.co.uk for their willingness to allow us to work with their resources in Anglia School and carry out our investigations. This collaboration is part of a large project which will rewrite tigtagworld so that it is accessible for CLIL classrooms around the world. In short, we're CLIL guinea pigs! Great fun!

> Dara (aged 8): 'Daddy, I want to learn Science'.
> Dara had been introduced to Science and Maths projects during her English classes as part of the homework club she attends at Anglia School. She's a grade two pupil. The statement above reveals more than its words convey. Dara thrived in an environment where she was expected to ask questions and find the answers herself. She loved this. What Dara means above is 'I want to do more Science. I want to learn all I can about Science. I want to do more Science investigations. I want to do more experiments.' Dara could have said 'I'm addicted to Science'. Fantastic!

Why do shadows change during the course of the day?

A simple investigation for children to do involves an exploration of why shadows change during the course of the day. This can be replicated quite easily in the classroom with simple instruments and a lot of curiosity!
Children carry out an investigation into shadows using a torch to shine at different heights onto an object to measure the changing size of the shadow. The children make a hypothesis: The angle of the light source changes the size of the shadow. The children then test their hypothesis: If I change the angle of the light source from low to high, the size of the shadow will go from long to short. They have a controlled variable: the height of the torch and other variables remain unchanged: the distance of the torch from the object. The children then make observations, expressing results at different stages. This is followed by children graphing the results and drawing conclusions based on their results. This short description is a very true scientific approach to an investigation and it is this very clear sequenced formula which lends itself to well to scaffolded language, phrases embedded in the right places, lots of repetition and highlighting of language from the teacher. This mix creates a magic language learning recipe for young children (and old children!).

What aspects of Science for young learners make it ideal for learning through EFL?
1) The language is very formulaic.
   The shadow is long.
2) There is little redundant language.
   The shadow is 20cm long.
3) Learning and concepts can be highly contextualized.
   Moving a torch and changing the shadow helps young children to understand how shadows change during the day as the Sun 'moves' in the sky.
4) Learning can be very visual.
   We can see the shadow moving.
5) Investigations involve using instruments which make learning concrete and immediate.
   You see an object and it has a name.
6) Procedures are highly repetitive.
   Done once, children quickly remember the steps of the procedure the next time they do one.
7) Hands-on learning builds confidence and develops motivation.
   Children need to touch, feel, move, change the environment in which they are learning.
8) Investigations give learners essential 'private' time and time with classmates to 'sort things out' in their own mind before being asked to doing anything in 'public' in class.
   Giving children time to recap what is done, with language support, allows them space to 'take in' new language and ideas and even perhaps consider them in L1 first before doing anything in L2.
9) Gathering data (re)focuses learner attention on what they have just done.
   Group sharing and talking about results, organizing and discussing data is all good repetition.
10) Presenting data (poster) makes the learners go through what they have just done AND think about what it means, frequently expressing this meaning in the FL as well as the L1.
   Visualizing what they have just done helps consolidate the concepts and the language.

 In short, Science can make learners forget they are learning English and so they learn a lot of English!

Appended you'll find a write-up of one of the investigations carried out at Anglia School with the Juniors group, aged 7 and 8. If you think you'd like to try some of this out in your own classes, get in touch, we'd be glad to share!

Investigating the length of shadows for Juniors

Hypothesis

The angle from which a light source is directed at an object will effect the length of it's shadow.

The higher the angle the shorter the length of the shadow, the lower the angle the greater the length of the shadow.

Materials

A solid object that can be either mounted upright or stuck in the ground. (a glue stick can project a 1.5 meter shadow so pick something quite small)
A torch, masking tape, measuring tape, document for recording data, a clip board, a long piece of paper / it could be several pieces taped together and a darkened room!

Note : - If you want to be accurate, it's important to mark the object for students to aim the light source.

Controls (these should be discussed and decided upon with the children)

Exterior light sources - do your best to minimise the interference of external light sources other than the torch.

Distance - in this investigation we are only measuring the length of a shadow when the angle of the light source is changed. So mark a distance and try to stick to it.

Object - Use the same object during the investigation, and mark a point at which to shine the light.

Light source - Use the same torch or light source you decide to use.

Measurement - use the same degree of measurement i.e Cm's or Inches. what will be the interval?

Concept introduction :-

Films from tigtagworld.com

http://www.tigtagworld.co.uk/film/the-sun-and-shadows-43/Activity

If you wish and have time outside and look at the shadows in the park, find the position of the sun and discuss how it's position is effecting the shadows of the trees, and or the children's own shadows. How do they think it may change later in the day when the sun is lower or higher in the sky?

http://www.tigtagworld.co.uk/film/cat-and-mouse-shadows-40/

Key Vocabulary

Angle	Hypothesis	Light
Shadow !	Position	measurement
Recording	Results	controls
Torch	Cm's	Investigation
Test	Fair	Length

Investigation Activity

It's essential to use a darkened room so that the light source can be controlled, and so that a clear shadow will appear, if you use some white paper under the object the shadow will be much clearer.

1.   Tape some paper together to be placed on the floor so you can mark the distance of the shadows. You will need about 1.5 meters.

2.   Place the (object) in an open position. Mark the floor with a starting position (the shadow will be stronger and clearer from a close distance) This is where the children will hold the torch from and aim at the object. It is important to mark the distance as this is a controlled variable, if the distance is changed it may effect the results of the test.   (the children can decide a distance from which to hold the torch)

3.   Use 6 different height positions from which to shine the torch, they should be even distances to make for understandable data. For example : - 5/10/15/20/25/30 cm's.

4.   Use a ruler to aid the children to hold the torch in the correct positions. As the children take turn to hold the light in the different positions ,another child can mark the end of the shadow on the paper.

5.	Measure the length of the shadow on the paper together. Then the children can record this information in a table Fig.1.	(also note any other observations made)

6.	Using the measurements in the table the children can create a line graph. Fig 2
Analysis : -
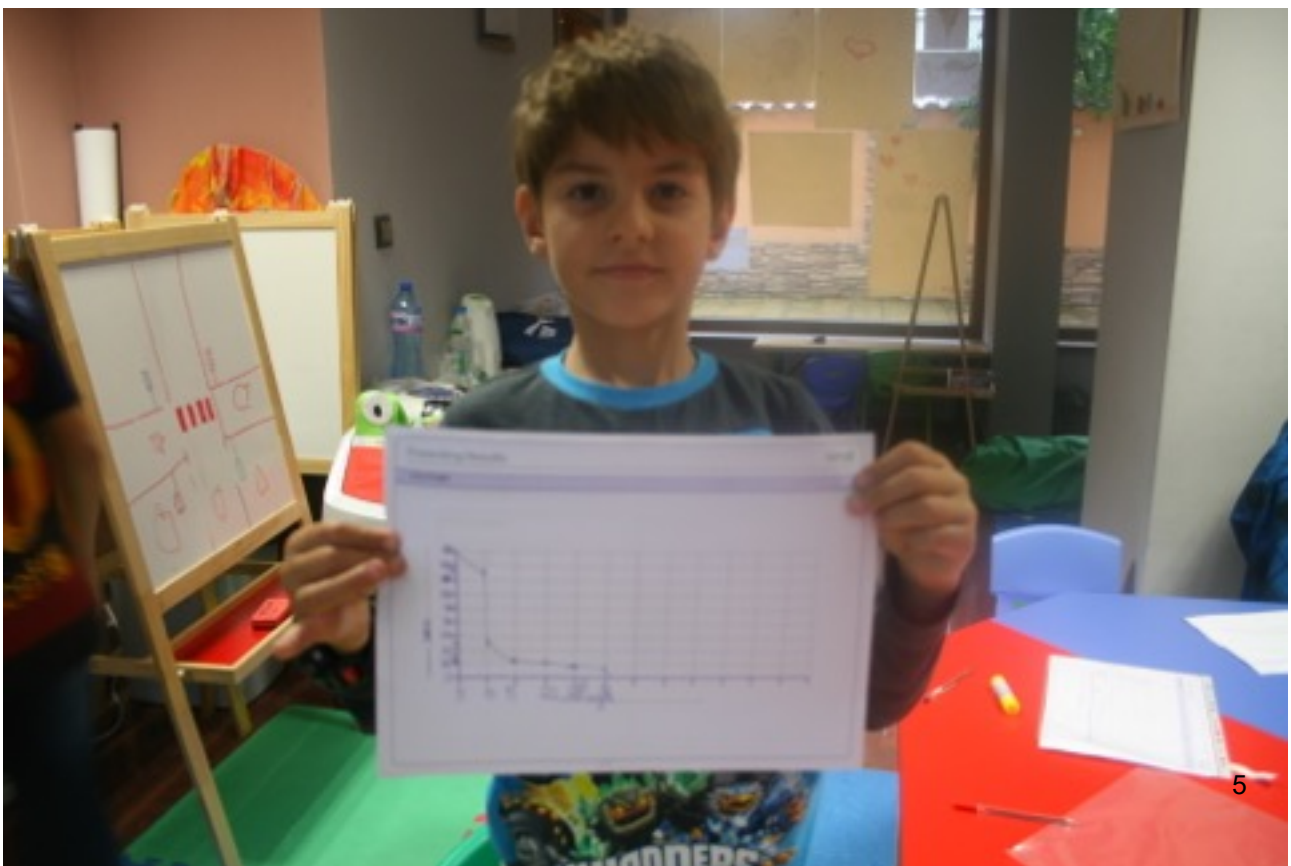
Analysis :

1.   Using the record table the children can now create a graph (skill - transfer of data) Fig. 2.

2.   When they have finished creating their graphs, ask the children to discuss the results.

         (Was it a fair investigation ? Is the information reliable ? What could have improved the investigation ? Was there anything unexpected ? Did the results support your hypothesis?)

3.   Concept check.

         (When would the longest shadow be, In the morning or at mid-day?   Why do you think this happens)

http://www.schoolsobservatory.org.uk/astro/esm/shadows

Fig 1.

Record Table

What I changed ( )	What I measured ( )

Fig 2 .

Presenting Results : Bar Chart

        What I changed ………………………………………………………………………………..

PLANTS IN OUR LIVES

In this topic, from the Association for Science Education, students learn about the many products obtained from local plants. The topic is designed to allow classes in schools across the world to exchange information about the ways in which their lives depend on plants.

The topic provides opportunities for students to identify local plants and the products obtained from them. Students investigate how plant use has changed over time within their community. They may also make a simple herbal beauty or health product.

Students explore the 'supply chain' for plant products. The concept of sustainable development is introduced and students use the 'development compass' to ask questions and explore issues relating to the natural environment, economics and society.

Students can investigate plant protection laws in their country and explore how the laws were made, how effective they are and how they are perceived by the local community. Students consider how pressures in their community might affect its plants and biodiversity.

Students may also choose an area of land in their school or local community and design a real or imaginary 'garden'. The garden design may include plants for survival throughout the year, plants and habitats that are under threat in the local area, or plants that are important in the history and folklore of the local area.

After exchanging their findings and views with students in other countries, students compare and discuss the responses received from classes in other parts of the world.

This topic fits into the biology curriculum. It links closely to geography, design technology, sustainable development education and citizenship. It provides an excellent opportunity for addressing the global dimension and sustainable development. In most countries it is suitable for students aged 12–16. It is available in English, Spanish and German.

There are still schools making active use of Science Across the World topics and exchanging ideas and information. For details visit the Science Across the World pages of the ASE web site.

This is one of a series of Plants topics developed as part of Gardens for Life which was funded by the UK Department for International Development, Creative Partnerships, Syngenta Foundation, DfES, Cisco Foundation and Future Harvest.

Part 8   Information Section

Table 1: Some of the world's most important plants and the main countries that grow and sell them. (click link to plant photographs)

Important food crops	The countries that grow the most of these plants	How much do they grow in a year? (in metric tonnes)
Bananas	India Brazil) China Ecuador Out of 130 countries	16,450,000 6,518,250 5,826,521 5,609,460
Sugar Cane	Brazil India European (15) China Out of 108 countries	386,232,000 289,630,016 105,744,868 92,370,000
Wheat	China India USA Russian Fed. Out of 123 Countries	86,100,262 69,320,000 63,589,820 34,030,000
Maize	USA China Brazil Mexico Out of 163 countries	256,904,992 114,175,000 47,465,900 19,652,416
Potatoes	China Russian Fed India USA Out of 157 countries	66,813,331 35,900,000 24,000,000 20,821,930
Cocoa	Côte d'Ivoire Ghana Indonesia Nigeria Out of 63 records	1,225,000 475,000 426,000 380,000
Rice	China India Malaysia Bangladesh Out of 119 countries	166,417,000 132,013,000 52,078,832 38,060,000
Palm oil *(from oil palm fruit)*	Malaysia Indonesia Nigeria Thailand Out of 42 recorded countries	13,354,000 10,200,000 910,000 620,000
Citrus fruits (oranges, lemons)	**Oranges** Brazil USA	 16,935,512 10,473,450

	Mexico	3,969,810
	Spain	3,091,400
	Out of 112 countries	
	Lemons and limes	
	Mexico	1,824,890
	India	1,370,000
	Argentina	1,200,000
	Spain	1,065,700
	Out of 95 countries	
	All citrus	
	Brazil	19,215,512
	USA	13,771,120
	China	12,544,695
	Mexico	6,475,411
Sunflowers	Russian fed.	4,870,620
	Ukraine	4,200,000
	Argentina	3,714,000
	China	2,000,000
	Out of 70 countries	
Soya beans	USA	65,795,340
	Brazil	51,532,344
	Argentina	34,818,552
	China	16,500,368
	Out of 92 countries	
Spices (pepper, chilli, cinnamon)	*Chillies and peppers*	
	China	11,534,871
	Mexico	1,853,610
	Turkey	1,760,000
	Spain	994,200
	Out of 150 countries	
	Pepper	
	Viet Nam	
	Indonesia	90,000
	Brazil	67,099
	India	62,984
		51,000
	Out of 31 countries	
	Cinnamon	
	China	47,000
	Indonesia	39,000
	Sri Lanka	12,200
	Viet Nam	6,000
	Total Countries 10	
Tea	India	885,000
	China	800,345
	Sri Lanka	303,230
	Kenya	290,000
	Out of 45 countries	
Coffee	Brazil	1,970,010
	Viet Nam	771,200
	Costa Rica	731,126
	Indonesia	702,274

	Out of 83 countries	
Other important plant crops		
Cotton	China USA India Pakistan	5,200,000 3,967,810 2,100,000 1,690,000
Rubber	Thailand Indonesia India Malaysia China Out of 34 countries recorded	2,615,100 1,792,000 694,000 589,366 550,000

Drug	Source	Use
Atropine	Atropa belladonna (Belladonna)	Pre-medication for anaesthesia
Caffeine	Camellia sinensis (Tea)	Stimulates central nervous system
Camphor	Cinnamomium camphora (Camphor tree)	Decongestant; relieves aches and pains
Cocaine	Erythroxylum coca (Coca)	Local anaesthetic
Codeine	Papaver somniferum (Opium popppy)	Pain killer; cough suppressant
Colchicine	Colchicum autumnale (Autumn crocus)	Anti-tumour agent
Digitoxin	Digitalis purpurea (Common Foxglove)	Increases the efficiency of the heart
L-dopa	Mucuna deeringiana (Velvet bean)	Treat symptoms of Parkinson's disease
Menthol	Mentha spp. (mint)	Decongestant
Morphine	Papaver somniferum (Opium poppy)	Pain killer
Quinine	Cinchona ledgeriana (Yellow cinchona)	Anti-malarial; treat cramps
Reserpine	Rauvolfia serpentina (Indian snakeroot)	Treat high blood pressure
Scopolamine	Datura metel (Recured thornapple)	Pre-medication for anaesthesia
Strychnine	Strychnos nux-vomica (Nux vomica)	Stimulates the central nervous system
Thymol	Thymus vulgaris (Common thyme)	Anti-fungal

Table 2 Important drugs derived from plants (Source WWF)

Biome	Total Area (km²)	Area undisturbed (%)	Area Partially Disturbed (%)	Area Human Dominated (%)
Temperate broadleaf forests	9 519 442	6.1	12.0	81.9
Evergreen sclerophyllous forests	6 559 728	6.4	25.8	67.8
Temperate grasslands	12 074 494	27.6	32.0	40.4
Subtropical and temperate rainforests	4 232 299	33.0	20.9	46.1
Tropical dry forests	19 456 659	30.5	41.1	45.9
Mixed mountain systems	12 133 746	29.3	45.0	25.6
Mixed island systems	3 256 096	46.6	11.6	41.8
Cold deserts/semi-deserts	10 930 762	45.4	46.1	8.5
Warm deserts/semi-deserts	29 242 021	55.8	32.0	12.2
Tropical humid forests	11 812 012	63.2	11.9	24.9
Tropical grasslands	4 797 090	74.0	21.3	4.7
Temperate needleleaf forests	18 830 709	81.7	6.4	11.8
Tundra and Arctic desert	20 637 953	99.3	0.7	0.3

Table 3 Amounts of disturbance by humans on different ecosystems, based on Gaston and Spicer, 1998.

Factors affecting current levels of biodiversity
(based on McNeely et al. 1995)

Immediate causes:
- Exploitation of wild living resources, including hunting and wildlife trading
- Expansion of agriculture, forestry and aquaculture
- Expansion of transport systems and building
- Habitat loss; especially coral reefs, wetlands, primary forests, and coastlines – all vulnerable and with great biodiversity.
- Species introductions
- Pollution of soil, water and atmosphere
- Global climate change

Underlying causes
- Changes in social organisation, including loss of indigenous cultures
- Growth of human population
- Patterns of natural resource and energy consumption – often involving the pressures of tourism, now the world's biggest industry
- Global trade
- Economic systems that fail to value the environment and it's resources
- Inequality in ownership, management and flow of benefits from the use and conservation of biological resources.

Main environmental agreements

- Convention on Biological Diversity (CBD) 1992
  Agreed by over 170 countries, at the Earth Summit in Rio de Janeiro

- Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), 1973.
  Agreed by over 130 countries. This bans trade in certain species and regulates trade in other endangered species. Wildlife trade is estimates at $20 billion per year, including illegal trade of approximately $5 billion.

- Convention on Wetlands (Ramsar Convention), 1971.
  Agreed by over 100 states. The only convention covering a specific eco-system, including marshes, swamps, peat land, lakes, shallow marine waters etc. These areas are important as fish and bird breeding grounds.

- Convention on Migratory Species (Bonn Convention), 1979.
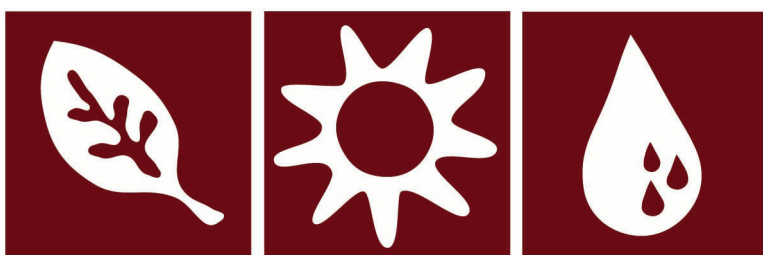 Agreed by about 50 parties to protect 55 migratory animals.

Other conventions include those on The Law of the Sea, Climate Change and Desertification. The World Heritage Convention protects some of the most significant natural sites e.g. the Great Barrier Reef in Australia. There are several hundred Biosphere Reserves designated by **UNESCO*** and the European Network of Biogenetic reserves as adopted by the Council for Europe. Most countries have their own protected sites.

The total global land area (excluding Antarctica) protected is about 7%. Farmland takes up about 38%.

Glossary

Agro-chemicals	Chemicals such as fertilizers, pesticides and herbicides which are used to improve farming productivity.
Biodiversity	The variety of living things that exist in nature, from the largest animals and plants to the tiniest micro-organisms. Bio=Life, Diversity = Variety.
Climate change	Long term variation in climate conditions, (animal) such as temperature, humidity which may or may not be affected by human activity.
Consumer	An organism which eats others organisms to get their food energy.
Energy	The ability to do work.
Economy	The system or range of economic activity or management of resources in a country, community or region.
Extinction	When the last individual of a plant or animal of a species has died.
Fair Trade	Positive relationships that are built between the farmers and workers in developing countries (the producers), and the businesses and people who buy their products in other parts of the world (the consumers). This makes sure that farmers and workers get a decent rate of pay and working conditions, when they produce crops and goods.
	There are four conditions that are considered when setting up a fair trade relationship:
	* Producers receive a guaranteed price for their goods and the security of long-term trading contracts.
	* Working conditions for the producers meet agreed levels of health and safety.
	* Producers, their workplace and the environment are not exploited.
	* Education and training opportunities are set up for producers, especially women and children.
Food Chain	A group of organisms which are related.
Folklore	Traditional beliefs, myths, tales and practices of people, transmitted orally.
Germination	The moment when the first root pushes out of a seed.
Habitat loss	A habitat is an environment or area, where a particular group of plants or animals live. Habitat loss is when this environment is irreversibly damaged or removed (for example, through pollution, flooding or building).
Human Rights	The Universal Declaration of Human Rights was signed by the United Nations in 1948. It isn't a law but is a set of guidelines for what all human beings should be entitled to. It was written by an international committee and looked at what all human beings should be entitled to, regardless of their nationality, colour, religion, or wealth. For example, that all people should be free of slavery. (ref: Peace Child International: Stand Up for Your Rights).
Myth	A traditional, old story to explain the natural world or how the local culture works.
Photosynthesis	The process that plants use to make sugar and oxygen from carbon dioxide, water and sunlight.
Pollination	For seeds to be able to develop, pollen from a flowers male part (the **anther**) must get to a flowers female part (the **stigma**). This process is called pollination. Some pollen is carried by the wind or water, but most is carried on the bodies of insects, bats or birds.
Primary Source of Information	Information or research that is gathered first hand; for example, through doing scientific experiments, interviews and surveys.
Producer	An organism such as green plants, which makes its own food energy.
Product	Something that is made or manufactured (other uses of the word might be the result of an event or process, or in maths - the number resulting from multiplication).
Secondary Source of Information	Information that is gathered from records of an event, or research that someone else has done (for examples, the internet, books, newspapers and film).

Seed	A seed holds the cells that will create a new plant. It also contains a supply of stored food and is wrapped in a protective coating. Seeds can only develop when pollination has happened.
Seed Dispersal	Spread of seeds from parent plant, to colonise new areas. Seeds are adapted for dispersal by wind, or by animals which may eat and then expel them or inadvertently carry them on their bodies.
Species	A group of organisms that can breed together to produce new fertile organisms.
Sustainability and sustainable development	Meeting the needs of the present generation without harming the ability of future generations to meet their needs; sustainable development balances the needs of the natural environment with the social and economic needs of a community. Sustain + ability = the ability to sustain things as they are.
Trade	Buying and selling for profit.
UNESCO	United Nations Educational, Scientific and Cultural Organisation.

Gardens for Life

PLANTS IN OUR LIVES

THIS TOPIC IS IN EIGHT PARTS

Part 1 **EVERYTHING DEPENDS ON PLANTS**
A brief introduction to how our lives are intricately dependent on plants. Students identify plants used in activities such as eating, drinking or building and keeping healthy. Students investigate how plant use has changed over time within their community.

Part 2 **FROM COFFEE BEANS TO BLUE JEANS…
PLANTS AND TRADE**
Students explore the economic uses of plants and consider the 'supply chain' for plant products. The concept of sustainable development is introduced and students use the Development Compass to ask questions and explore issues relating to the natural environment, economic and society.

Part 3 **LOCAL PLANTS**
The main useful plants grown locally are identified and their growing seasons, harvest   times and uses are described. Students find out about the general good growing conditions in their local area. Local myths and folklore relating to plants are collected and examined.

Part 4 **PROTECTING PLANTS**
A brief introduction to plant biodiversity. Students investigate plant protection laws in their country and explore how the laws were made, how effective they are and how they are perceived by the local community. Students consider how pressures in their community might affect its plants and biodiversity?

Part 5 **ACTIONS FOR PLANTS**
Students choose an area of land in their school or local community and design a real or imaginary 'garden'. The   garden design may include plants for survival throughout the year (e.g. food, building materials, medicines etc.), plants and habitats that are under threat in the local area, or plants that are important in the history and folklore of the local area.

Part 6 **EXCHANGING INFORMATION**
Providing information and results from experiments in the exchange form.

Part 7 **COMPARING INFORMATION FROM OTHER COUNTRIES**
Comparisons and discussions of responses from different countries.

Part 8 **INFORMATION SECTION**

In Part 1 students explore how our lives depend on plants and how their use has changed over time.
In Part 2 students look at the economic used of plants and explore the concepts of sustainable development and fair trade.
In Part 3 students learn about local plants, their growing conditions and associated folklore.
In Part 4 students investigate biodiversity and plant protection laws in their local environment.
In Part 5 students choose an area of land and create real or imaginary 'garden design'.
In Parts 6 and 7 Students exchange their findings with students in other countries. They explore which countries make the most of local plants and what are the longest distances traveled by food. Then they discuss similarities and differences in the way habitats and plant species are being protected in different countries, and which action plans offer the most practical solutions to the issues.

The issues

This topic explores the vital and extensive role that plants play in our lives. Students investigate how plant use has changed over time in their local community and explore the cultivated and non-cultivated plants in their region today. The concepts of a global supply chain, sustainable development and fair trade are introduced, as students consider the social, economic and environmental issues raised by global trade. Students investigate the laws that protect their local plant biodiversity. The final activity draws the concepts together as students design a real, or imaginary garden, choosing plants that will grow in their local conditions and that would be important for human survival, environmental and cultural significance.

The Aims of this topic are to:

■ Explore and understand the following concepts:
  We all depend on plants in our every-day lives, whoever we are and wherever we live. Our use of plants links us to people and places all over the world.

■ Understand the environmental, social and economic significance of plants grown in the local region.

■ Introduce the concept of sustainable development and explore positive ways of looking after plants, people and environments.

Age range

In most countries this topic suitable for students aged 12 to 16 years old.

Curriculum links

This topic will fit into the biology curriculum. It links closely with Design and Technology geography, global citizenship and sustainable development. It provides an excellent opportunity for cross-curricular study and for addressing the global dimension and sustainable development within science.

PART 1   EVERYTHING DEPENDS ON PLANTS

Aims:
- **To explore how we depend on plants in our every day lives and to consider how plants affect the quality of our environment and lives.**
- **To explore how use and cultural significance of plants have changed over time in the local area.**
- **To investigate how our use of plants links us to people and places around the world.**

As a starter activity to this topic, figure 1 may be used to prompt discussion about how our lives are intricately dependent on plants. If possible photocopy larger versions of the illustration, or project it onto a whiteboard.

Additional Resources: See http://www.edenproject.com for plant photographs. A list of the main countries where these are grown can be found in the Information Section of the Students Notes.

If you are able to download and print the plant photographs, you could hand out a range of manufactured products that you know contain plants. In groups, ask your students to try and link the products with the correct plants. Teachers should select a number of items that are relevant to the students.

Ideas of plant to product links are:

Cotton	Cotton shirt, jeans, nappies, toothpaste
Coffee	Coffee
Tea	Tea bags, loose tea
Cocoa	Chocolate
Banana	Banana ice-cream, milkshake, beer
Sugar	Fizzy drinks, confectionary and cakes...
Maize	Popcorn, maize meal.
Wheat	Bread, biscuits, cake
Oil Palm	Soap, candles, margarine, ice cream and many packaged food items. The highest oil producing tree.
Citrus	Cleaning products, air freshener,
Rubber	Bicycle/car tyres, classroom eraser, rubber boots, shoe soles, fan belts, condoms.
Rice	Cereals, rice flour, rice, baby food.

Discuss the results of the activity. Are students surprised at the array of 'hidden' plants in their lives? How else do students use plants every day?

In **activity 1**, students create a table outlining their activities through a typical day in their lives, and explore their personal use of plants. In addition to plant products, they should be encouraged to think about how plants might affect their quality of life and quality of their local environment. Students work as a group to summarise their findings into a poster. They could choose to dramatise this by creating song, poems, raps or performance.

> **Quote from a teacher in India** – "Students become aware about the use of plants in their daily life and also how they can change their habits to control the misuse of these plants."

In **activity 3**, students interview older members of their community to investigate how plant use has changed over time. In groups, students should be encouraged to prepare and agree questions before conducting surveys or interviews.

> **Quote from a teacher in India** – "Students became aware about the importance of plants in their close vicinity. They also became aware of their property and their use in religious functions and their medicinal properties."

Finally, students identify a local 'multiple use' plant and are challenged to make at least 4 different products out of it. The challenge can be made harder, and more fun, if students are not allowed to use any non-plant ingredients in making their product (except water) – for example twigs can be used to pin sides together instead of staples or tape.

> **Quote from a teacher in India** – "Activity had lots of fun involved. Wonderful activity for students and can be carried out in all standards by changing the level of difficulty."

PART 2 FROM COFFEE BEANS TO BLUE JEANS…PLANTS AND TRADE

Aims:

- **To consider economic uses of plants and how the supply chain for products may include different groups of people and span across the globe.**
- **To explore the concept of sustainable development and positive ways of looking after plants, people and environments.**
- **To introduce the Development Compass as a tool.**

In the introductory paragraph, students are introduced to economic uses of plants and the concept of a 'supply chain'. *Activity 5* asks students to choose one product to research in depth and guidance questions have been given. They are invited to present their findings as a cartoon strip to demonstrate the process and supply chain of your product. There are many websites available that can help with this research (see sources of information). Excellent sources are:

- Dubble Agents. The Day Chocolate Company Primary and Secondary resources about chocolate and fair trade. www.dubble.co.uk

- Oxfam. Fair Trade and specific information about coffee. http://www.oxfam.org.uk/what_we_do/fairtrade/index.htm.

- Papapaa, Divine Chocolate. Primary and Secondary resources about chocolate and fair trade. www.divinechocolate.com/edu

> **Quote from a teacher in India** – "Students found it easy to relate the making of any product to that of environmental concerns."

Before moving on to **activity 6** read and discuss the information boxes that explain the concepts of Sustainable Development and Fair Trade. Have students found any examples of issues that they think are relevant to their product?

Students use the Development Compass as a tool to explore the issues relating to the production of their product.

PART 3 LOCAL PLANTS

Aims:
- **To learn about cultivated plants growing in the local area.**
- **To understand the environmental, social and economic significance of plants grown in the local region.**

Read the text boxes and information before asking students to explore the main useful plants grown locally and to find out about growing seasons, harvest times and uses. In rural areas, observational surveys can be made in the local area and if possible, interviews with gardeners and farmers. In urban areas, students may investigate local gardens, allotments, and city farms; alternatively, farmers markets or shops selling local produce may be a useful resource.

Some students may not recognise fodder crops as being 'useful plants' (e.g. grass, root crops). This could encourage useful discussion about food chains.

Students find out about and describe the general good growing conditions in their local area.
Teachers could choose to conduct a classroom demonstration experiment to investigate how light and temperature can affect the growth of plants.

Activity 9 provides an interesting homework activity, with students finding out about local myths and folklore. To find out whether these myths and folklore have any scientific basis, students could use the internet, contact local botanical gardens or plant research centres.

> **Quotes from teachers in India** – "Students enjoyed this activity learning about mythological stories, importance of traditional values, the religion and their customs etc."
>
> "Students became aware of the importance of plants in their close vicinity. They also became aware of their property and their use in religious functions or their medicinal properties."

PART 4 PROTECTING PLANTS

Aims:
- **To introduce the concept of plant biodiversity.**
- **To consider human pressure and threats to biodiversity and explore laws that protect biodiversity (locally, nationally and globally).**

This part of the topic provides a good opportunity for discussion and debate, either as small groups or as a whole class. First read the information boxes and study the illustrations. Students then discuss the main pressures on plant biodiversity in their region. They investigate plant protection laws in their country and explore how the laws were made, how effective they are and how they are perceived by the local community. Students consider how pressures in their community might affect its plants and biodiversity.

Teachers could choose to set up a class debate setting a scenario that puts pressure on a local area of natural beauty, for example a proposal for a new development (such as a new tourist hotel). State that a community meeting will been called to discuss this proposal. The class should be divided into groups of local community members (e.g. taxi drivers, local wildlife conservation group, the tourist board, local unemployed people, young families). Give the students some time for preparation. The debate should consider the views and opinions of each group before making a final decision on whether the development should be allowed to go ahead. A debate could encourage students to think about the balance between social, economic and environmental factors when making a decision.

PART 5 ACTIONS FOR PLANTS

Aim:
- **To combine the themes of this topic into a creative, practical task.**

Students choose an area of land in their school or local community and design a real or imaginary 'garden'. The garden design may include plants for survival throughout the year (e.g. food, building materials, medicines etc.), plants and habitats that are under threat in the local area, or plants that are important in the history and folklore of the local area.

A plan of this design can be submitted with the Exchange Form.

PART 6 EXCHANGING INFORMATION

Students need a copy of the Exchange Form which they can download for themselves or you can provide on paper or in an electronic format.

The Exchange Form for this topic has been designed so that students can complete each activity on the form as they work through the topic. It is suggested that they first work on their own forms individually or in small groups. They can then agree on amalgamating ideas so that one Exchange Form is completed for each class or group.

Students can complete the Exchange Form as a paper copy or on-screen, and then send it to other schools as an email attachment, by fax or post.

Establishing communication links with other schools before starting detailed work on the topic helps with more immediate feedback. Some schools enjoy exchanging ideas and progress reports by email while they are working on the topic.

PART 7 COMPARING INFORMATION WITH OTHER COUNTRIES

When you have received the Exchange Forms from other schools, copy these and your own Exchange Forms for comparison and analysis. Compare and discuss the responses with the help of some of the questions in the Students notes.

FURTHER ACTIVITIES

■ Students could work individually, or a part of a group to explore one of the following topics further:

- ■ plants and medicine
- ■ plants and fashion
- ■ plants and construction.

Students can create presentations for the class on how plants are used in this industry. Students may be set a challenge for the presentation style they must use such as a TV documentary, radio broadcast, drama, comedy.

■ Students investigate their local situation to find if traditional products and methods are still known and used.

> **Quote from Roshan Kokane, VIIth M.L.R.T.Gala Pioneer English School, India**
> "Students made paper bags for sale in the market to replace the use of polythene bags."

SOURCES OF INFORMATION

The American Society of Plant Physiologists. An international organisation for people who are interested in plants (including students, teachers, plant biologists, horticulturalists, agriculturalists). They have information, publications and brochures on plant science.
www.aspp.org (email askapp@aspp.org)

Dubble Agents. The Day Chocolate Company Primary and Secondary resources about chocolate and fair trade.
 www.dubble.co.uk

The Eden Project. The 'Living Theatre of People and Plants' explores the relationships between people and plants, and how communities and environments are linked across the globe.
www.edenproject.com

The Henry Doubleday Research Association is a UK organic association, with a schools education section and an international research department.
www.hdra.org.uk

Oxfam's Cool Planet for teachers.
Includes information about Fair Trade and other educational resources and publications. Also look at the Cotton Chain.
www.oxfam.org.uk

Papapaa, Divine Chocolate. Primary and Secondary resources about chocolate and fair trade.
www.divinechocolate.com/edu

Rescue Mission Planet Earth. A children's edition of Agenda 21. Peace Child International, 2002. Written, illustrated and edited by young people of the world. ISBN 2468 109 7531
www.peacechild.org.uk

The Royal Botanical Gardens, Kew. The role of education at the Royal Botanic Gardens, Kew is to increase knowledge and understanding of the value and vital importance of plants. Their website includes teaching and learning resources.
www.rbgkew.org.uk/education

The Royal Horticultural Society, UK's leading horticultural charity.
www.rhs.org.uk

SAPS (Science and Plants for Schools) - educational resources to promote exciting teaching of plant science and molecular biology in schools.
www.saps.org.uk

World Learning, BBC World Service, Bush House, Strand, London WC2B 4PH
World.learning@bbc.co.uk

World Wildlife Fund. The conservation organisation with education fact sheets, environmental debates and publications.
www.wwf.org

ACKNOWLEDGEMENTS

- **References**

  - **The American Society of Plant Physiologists** www.aspp.org
    For inspiration for some of the plant facts boxes in the Pupil Pages.

  - **Biodiversity**, An introduction by Gaston and Spicer, 1998.

  - **The Development Education Centre**, Birmingham. www.tidec.org
    The Development Compass 1995.

  - **The Eden Project**, Cornwall, UK. www.edenproject.com
    For inspiration, plant facts and photographs and Anna Murphy's poem "My grandmother said…"

  - **The Food and Agriculture Organisation of the United Nations**.
    www.fao.org
    Statistical information table in the Pupils' notes information section.

  - **Geneflow Junior,** by IPGRI (International Plant Genetic Resources Institute) 2001.

- **Consultants**

  - **Jacquie Ashton**
    Penrice Community
    College
    Cornwall, UK

  - **Jackie Chave**
    Royal Horticultural
    Society, UK

  - **Marianne Cutler**
    Science Across the
    World, UK

  - **Vandana Desai**
    Kapila Khandvala
    College of Education,
    Mumbai, India

  - **Gill Hodgson**
    Eden Project, UK

  - **Christine Newton**
    Royal Botanic
    Gardens, Kew, UK

  - **Helen Sambili**
    Egerton University,
    Njoro, Kenya

  - **Elizabeth
    Wareham**
    Department of
    International
    Development, UK

  - **Egbert Weisheit**
    Friedrichsgymnasium,
    Hessen, Germany

Gardens for Life

Building Digital Bridges in education and training

NikolinaTsvetkova, PhD, Education and Innovation Centre

Today's digital technologies both pose new challenges before educators and provide some innovative formulae to a number of theoretical and practical aspects of education on all levels – including pre and in-service training. It is not incidental that specialists are looking for ways to build on the affordances of modern ICTs and develop and implement different pedagogical solutions in a number of educational settings.

The Digital Bridges project[1]represents such a serious attempt. It aims to develop pedagogy and curriculum for trainers, educators and mentors around the use of the simulated practice-learning environment and to develop and deliver a curriculum around simulated practice learning aligned with ECTS/ECVET for credit transfer. The broader target audience of the project is related to **Social Services and Healthcare but at its heart lies a**n immersive 3D virtual environment, built on gaming architecture and driven by emotional AI (artificial intelligence) for child practitioners. This Skills Rehearsal game has been developed to provide a safe and readily accessible environment where Higher Education and VET students and professional social workers who deal with vulnerable people can learn by interacting with NPCs (Non-Player Characters) in a simulation of a real world service. The project has also develope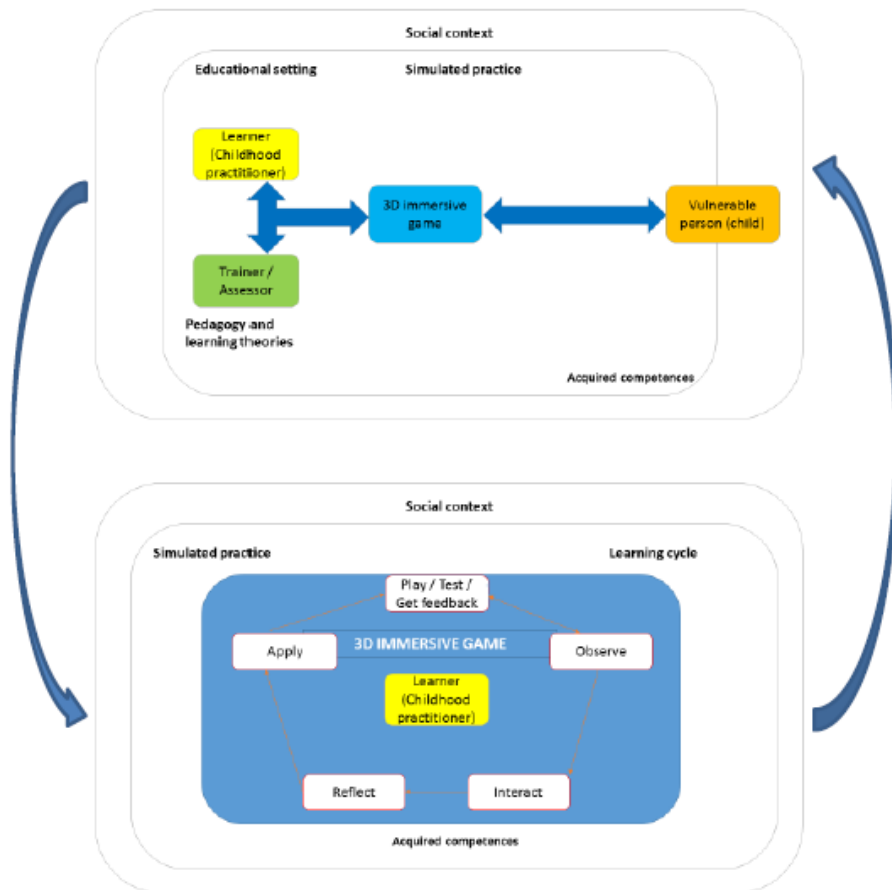d a Pedagogical *Framework for Simulated Practice Learning for Social Workers who Interact with Vulnerable People and a Model Curriculum*

In line with the main pedagogical approaches adopted in this project and outlined in the Pedagogical Framework document, trainees will engage with simulations and be required to navigate their way through choices to arrive at the best resolution of the situations the Game involves them in. They are also invited to reflect on their while-playing experiences and reflect on them so that the targets of the adopted Curriculum are achieved.

Each simulation can be replayed and evaluated by the trainer/mentor and the trainee can use the same simulation as many times as required. This offers a measurable, controlled environment where learners can gain command of the basics of the job role they are training for with minimal resource requirements and zero risk to the public, thus providing a sound basis from which to progress to real work practice placement. This approach is considered useful in on-the-job training for novice workers too. It can be

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[1]Digital Bridges (2014-2016) isa KA2, Erasmus+ project - № 2014-1-UK01-KA200-001805 - which is carried out by six partner organizations from five European countries (Scotland/UK, Finland, Bulgaria, Italy, Lithuania under the coordination of the University of West of Scotland.

used to stimulate exchange of ideas and experience between newbies and workers of a longer experience.

The **Pedagogical Framework** outlines the pedagogical approaches relevant to the learning experience envisaged to take place by use of the Game, namely, behaviourism, cognitivism, constructivism, social constructivism, connectivism and pays attention to the knowledge, skills and competences which are targeted. It also demonstrates the context in which the simulated practice takes place as well as the relations between the broader social context and the learning achieved in the process of using the simulation game for competence training.

Fig. 1: *Pedagogical Framework for simulated practice learning for social workers who interact with vulnerable people*

The **Curriculum for Simulated Practice Learning for Social Workers who Interact with Vulnerable People** is an example of implementing the Framework in practice and focuses in particular on the process of preparing child practitioners for the necessary skills for their job of treating and taking care of children in an establishment such as a kindergarten. The curriculum is designed to:

- offer learners a coherent, stimulating and effective programme of learning opportunities
- provide learners with a sound learning opportunity in the area of early years and nursery settings.

- enable learners to develop the inter-relationships utilising the structure of the simulation game and diversity of learning objects available within the game construct
- enable learners to plan and develop lifelong learning interests
- enable learners to assume responsibility for managing an intellectually diverse programme of learning that can be applied within different contexts of professional practice.

The **Simulation Game** called the Tiny Oaks Nursery itself is expected to result in positive impacts for:
- improved competences linked to professional profiles (for future child practitioners, child practitioners of little or no experience and teachers / trainers of such)
- improved levels of skills for employability
- increased opportunities for professional development through the existence of the simulated practice environment and skills rehearsal
- a more active participation in society

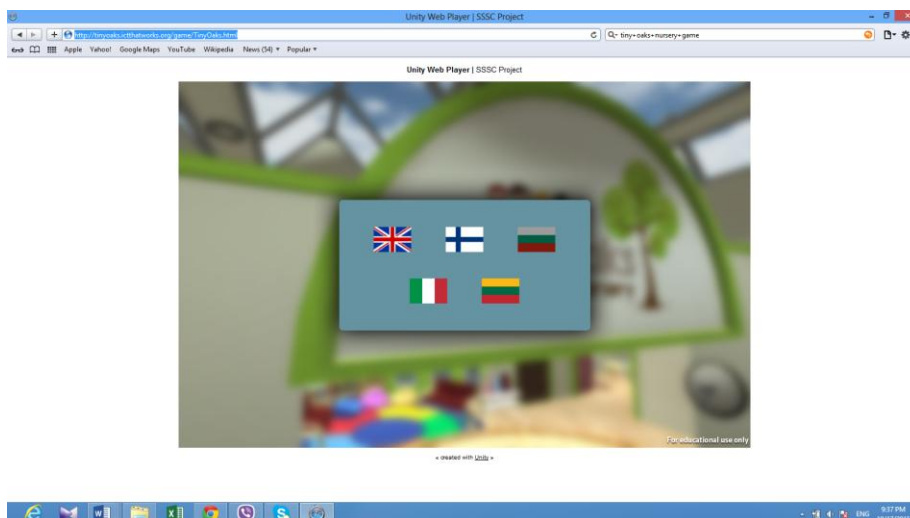The Game is available in five languages – English, Italian, Bulgarian, Lithuanian and Finnish.

Fig. 2: *TheTiny Oaks Nursery game*

The Game itself aims to
- introduce learners to a range of some of the critical approaches within the nursery / child care environment
- enable learners to acquire critical skills of description, analysis and evaluation through critical reflection
- enable learners to acquire skills in collaborative communication, autonomous learning, structured discussion and information technology
- help learners improve their digital competence as a by-product**.**

The introduction of game-based learning models coupled with the Pedagogical Framework and the Curriculum reflects the use of two main educational approaches: active learning (knowledge acquisition

based on hands-on experiences), and learning-by-reflecting (group discussions and reflection on individual assessment, obtained scores of the game, etc.).

The partners have now started to carry out multiplier events in each country to popularise the adopted approaches and the achievements of the project and to outline the future uses of the project outputs in a broader social context.

Fig. 3: A glimpse of the magical atmosphere typical of nursery settings - the multiplier event in Sofia in December 2015

Training courses following the *DB Pedagogic Guide*have now been set up to train educators to set up and conduct a simulated practice learning for (future) specialists working with children (vulnerable people). Addingfurther features such as legal documents, specific case studies, etc. or opting for specific teaching methods and techniques, is going to make the simulated practice reflect particular national, regional or local requirements and thus serve real context-oriented needs.

TALES FROM THE INVISIBLE WEB OF LIFE

by Stoyan Faldjiyski

The "Tales from the invisible web of life" is a collection of illustrated scientific stories for children aged 6 -10 years old, for their teachers and parents. The collection is being created by Ecosystem Europe Association, NGO based in Sofia, Bulgaria.

The tales are inspired by the cycles of the 11 chemical elements structuring 99% of life on Earth. Namely, oxygen, carbon, hydrogen, nitrogen, calcium, phosphorous, potassium, sulfur, sodium, chlorine, magnesium. Each element is represented by a fiction character that makes a "journey". There is a human character as well. The fiction characters are his friends and the young boy discovers the natural world while travelling and playing with his friends. The natural world is used as a mentor, measure and model. The children are inspired by it, discover how ecosystems function and understand that the living world is not something out there but is within each of us.

It is about being innovative ...

The tales will develop an innovative educational instrument for (re) connecting primary school children to their natural and social environment and thus inspiring and empowering them to become successful and responsible entrepreneurs when shaping their future and designing solutions for the environmental, social and economic challenges ahead.

Innovation in the tales will introduce children to the opportunities offered to them by the world, by showing the links between living organisms, between man and nature, by showing the cyclical patterns that inspire us to cherish nature and empower us to see and design solutions if we are to achieve our desired future.

It is about learning ...

The tales initiate a process of learning, which stimulates the parallel development of academic knowledge, of emotional intelligence, of creative thinking and expression, and, of understanding of the relationships in the natural, social and economic worlds. The parallel development of all these qualities, knowledge and skills is absolutely necessary in preparing children to meet the challenges of tomorrow.

The tales are primary about nature inspired learning outside the classroom (LOtC). LOtC is the necessary response to the pedagogical issues linked to the capabilities of humanity to sustain life on Earth (Faculty of Primary School Pedagogy, Sofia University, 2014).

Linking children with nature is a prerequisite for the comprehensive growing-up of each individual. Unfortunately, Bulgarian primary schools, and possibly in other countries, are badly missing innovative pedagogical approaches and educational content to insure this link.

It is about teaching ...

The tales will be suitable for individual, group and project work by pupils, guided by teachers and/or parents. The collection will be complemented by a methodological guidebook for teachers and/or parents. The guidelines will contain ideas and concrete suggestions for practical educational activities, to be performed primary outside, but also inside, the classroom. Activities inspired by and related to the content of the tales.

It is about bringing change ...

To be successful in Europe one needs knowledge and skills that are demanded by a low carbon and innovative economy addressing major challenges - climate change, resource efficiency and energy (Europe 2020 Strategy).

Education has a key role in promoting behavioural changes and developing the key competencies, necessary to achieve sustainable development (Sustainable Development Strategy of the EU).

The tales are based on the idea that education must ensure the resilient and sustainable communities of tomorrow. The drivers of those communities are pupils aged 6 to 10 today. These children need adequate educational programmes now.

As already said, these programmes are missing. As a result, the proportion of Bulgarian students below the threshold of excellence in science (secondary school) is about 40%. These students have significant gaps in their training in natural sciences, do not possess the necessary knowledge and skills that PISA defines as a prerequisite for successful life (PISA 2013).

The foundation that had to be laid in the primary school period is missing. The "Tales from the invisible web of life" is our response to that challenge. If you would like to support the development of the tales and their national and international dissemination, please contact us at Ecosystem Europe Association.

TITLE OF THE ACTIVITY: Feathers

AUTHOR: Stefka Kitanova

INTRODUTION Birds are endlessly interesting – flying creatures - and humans are always dreaming to do the same. Feathers are even more interesting. Their structure is what makes flight possible.

COURSE/LEVEL young learners/A2

KEY WORDS feathers, structure, flight

OBJECTIVES To introduce to YL interesting knowledge about the feathers and their relation to the flight phenomenon

SKILLS TO PRACTICE

- artistic
- oral
- communicative

CONTENTS

- SUBJECT – structure and form of feathers

- SOCIAL AND CULTURAL – zip was invented on the basis of feathers

- FUNCTIONAL – descriptions

- STRATEGIC – orientation, fine motorics development

- LEXICAL – parts of the feathers, types

- PHONETIC – how to pronounce th

- GRAMMATICAL – prepositions, eg on, at

PREPARATION NEEDED

- Teacher's guide (Anex I)
- Students handouts (Anex II)
- Others (Anex III, IV)

DURATION

- 80 min

DYNAMICS

Activities before: whole group
Activities during: small groups, individual
Activities after: whole group

REFERENCES

DESCRIPTION OF THE ACTIVITY

1. The lesson starts with the question if the kids know any birds and which can they name – so the names will be revised. Then some feathers are shown and the kids asked if they want to have a closer look at them.
2. Then, Handout 1 is given to the students and type of feathers are mentioned/discussed.
3. After that, Handout 2 is given and students are asked to compare their feathers with both Handouts and say which form and type they have.
4. Students are asked to draw their feathers and the fastest ones can exchange and draw those of the classmate(s).
5. Than Handout 3 is given/shown and students are asked to find on which part of the body are located the feathers with different forms (so to think on the function of them).
6. At the end they are asked if they know that something we use every day was invented on the base of feather structure.
Handout 4 is presented and the teacher explains that the zip was invented based on feathers and shows the structure.

Students are asked to find the hooklets and barbules in/on the feathers they have.

ANNEX I TEACHER'S GUIDE

Magnifying glasses, feathers, pencils and paper are needed.
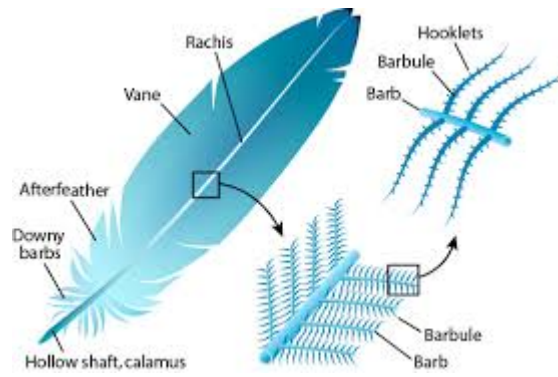
ANEX II. STUDENT'S HANDOUTS
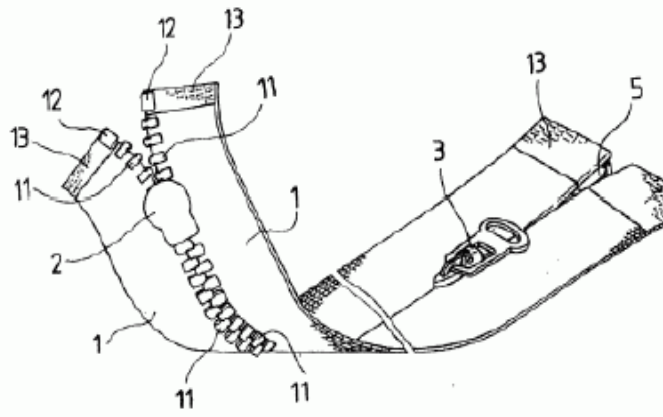

HANDOUT 1

HANDOUT 2

HANDOUT 3

HANDOUT 4

FIG. 1

Рециклирането

Цикличността е едно от основните свойства на природата. Нещо се създава, оползотворява се, след това се разгражда, а накрая от разградените продукти отново се създава нещо. В днешно време обаче човек е стигнал до такова ниво на познанията си, че създава неща, които са непознати за природата. При създаването им той не мисли за тяхното унищожаване, нито съзнава, че вредейки на природата, те вредят и на самия него. За щастие разумният човек е измислил начин за редуциране на вредата на неразградимите продукти чрез рециклирането им. Процесът на рециклиране допринася за спестяване на необработените суровини, от една страна и намаляване на количествата отпадъци и замърсяване на околната среда, от друга. Поради това технологиите за рециклиране са важни както във финансов, така и в екологичен аспект.

След това кратко и сухо обобщение стоя пред студения и безжизнен екран и се чудя откъде да започна. Моята мисия е да убедя читателя, че рециклирането не е просто добро дело, а жизнено важно дело. „Една птичка пролет не прави“, ще си каже читателят. Така е, но заедно можем. Хората трябва да мислят, че с всеки рециклиран лист хартия, спасяват едно листенце, с една тетрадка – храст, а с цял кашон рециклирана хартия – едно дърво. Това дърво ни е дало шанс да живеем, благодарение на него съществуваме. Нима сме толкова безразлични към бъдещето, нима имаме очи само за настоящето? Какво ще се случи след няколко години, когато тези непокисти се озоват в един железен свят, без зеленина, без ухание на свежест, а само на машинно масло. „Тогава ще му мислим“, „До тогава няма да съм жив“, това си мислите сега, нали? Тогава вече ще е късно, а кога ще се случи никой не може да каже. С всяка неправилна мисъл, човек предизвиква природата, а тя не е много търпелива. Днес съществуват така наречените природозащитници, но защо да се делим от тях? Какво толкова правят те? Хвърлят пластмасовата си чашка в жълтия контейнер, вместо в обикновения. Не е толкова трудно, нито се изисква усилие или повече познания. Нелогичното отношение на днешното общество към природата е глуповато. Дори мързелът не може да го опише, а по-скоро изкушението от погрешното. Човек не бива да се поддава на това изкушение, не бива да предизвиква природата, защото природата е най-голямата сила на света и наказанието може да е много по-страшно от това, което предполага човечеството.

Мария Лазарова, 164 Гимназия с преподаване на испански език - София

El reciclaje

El ciclismo es una de las propiedades básicas de la naturaleza. Algo se genera, se utiliza, después se descompone y al final de los productos descompuestos de nuevo se genera algo. Pero hoy en día el hombre ha llegado hasta tal nivel de sus conocimientos que crea cosas que son desconocidos para la naturaleza. Al crearlas, él no piensa sobre su destrucción, ni se da cuenta de que al dañar la naturaleza, ellas dañan a él también. Afortunadamente el Homo sapiens ha inventado una manera de reducir el afecto prejudicial de los productos nodescomponibles a través de su reciclaje. El proceso de reciclaje contribuye por un lado al ahorro de las materias primas en rama, y por otro a la reducción de la cantidad de basura y la contaminación del ambiente. Por eso las tecnologías de reciclaje son importantes para la economía y para la ecología al mismo tiempo.

Después de esta introducción breve y sosa, estoy sentada frente la pantalla fría e inanimada y dudo por dónde empezar. Mi tarea es convencer al lector que el reciclaje no es símplemente una bondad, sino un asunto vital. „Una golondrina no hace primavera", dirá el lector. Es así, pero podemos hacerlo juntos. La gente debe creer que con cada hoja de papel reciclada, se salva una hoja de arbol, con una libreta – un arbusto y con una caja de papel reciclada – un arbol. Precisamente este arbol nos ha dado la oportunidad de vivir, gracias a este arbol existimos. ¿Somos tan indiferentes al futuro y tenemos ojos solo para el presente? ¿Qué pasará después de unos cuantos años cuando estos indolentes terminarán en un mundo férrero, sin verdura, sin aroma de frescura, sino con aroma de aceite de máquina? "Lo vamos a pensar entonces", "No voy a estar vivo hasta entonces", esto es lo que pensáis, ¿no? Entonces ya estará tarde y además nadie puede pronosticar cuando sucederá. Con cada pensamiento incorrecto el hombre

provoca la naturaleza y ella no tiene mucha paciencia. Hoy existen unos grupos de defendadores de la naturaleza, ¿pero por qué nos separamos de ellos? ¿Qué tan especial hacen? Echan su vaso plástico en el contenedor azul en vez de echarlo en el contenedor común. No es tan difícil ni se requiere esfuerzo o más conocimiento. El trato ilógico de la sociedad de hoy a la naturaleza es estúpido. Ni la pereza lo puede explicar, sino más bien la tentación del incorrecto. Uno no debe sucumbir a esta tentación, no debe provocar la naturaleza, pero ella es la más fuerte en nuestro mundo y su castigo puede ser más terrible de lo que la humanidad sugiere.

Maria Lazarova, 164 Liceo de Lengua Española, Sofia

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tigtag | CLIL

Coming soon!

Bring science to life for English learners

Inspire CLIL students with outstanding short films and interactive resources, created especially for primary students learning science and geography in English.

Tigtag is working with leading CLIL experts to meet the unique needs of CLIL teachers and learners.

Tigtag CLIL will launch in autumn 2016 with over 800 short films, plus lesson plans, worksheets, language support, games and quizzes.

Tigtag films – perfect for CLIL learning

Films are a natural medium for learning language – dynamic images, sound and text all support understanding.

- 800 films provided with voice-over, graphics, captions and transcripts
- 150 core curriculum films in simplified English
- bilingual captions available for some languages
- lesson plans, worksheets, concept maps, games and an interactive audio glossary
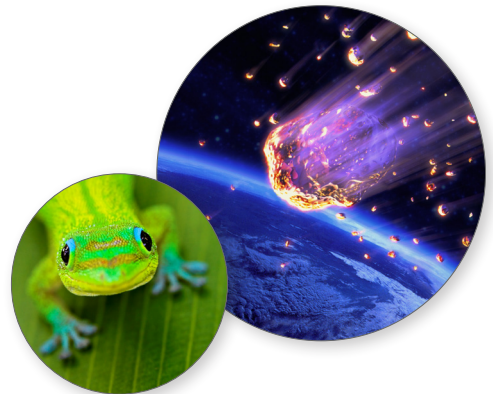
Want to try Tigtag CLIL?

We are looking for testers in spring/summer 2016 to test and give feedback on our primary CLIL resource. Testers get 3 months free access. If you're teaching science in English to kids aged 7–11, get in touch at **clil@twig-world.com**


bett AWARDS 2016 WINNER · bett AWARDS 2015 FINALIST · bett awards 2014 WINNER · bett awards 2013 WINNER · SMART MEDIA · For the Classroom · 20 FINALIST 2013 · WINNER BETT Awards · era 2012 WINNER · learning on screen Awards 2012 Courseware and Curriculum Award WINNER · IMA WINNER 2011

Three-minute films, content activities and language support – all at your fingertips

> **absorb**
> *verb*
> to take something (such as a gas, liqu[...]
> Chlorophyll absorbs light energy from the Sun.

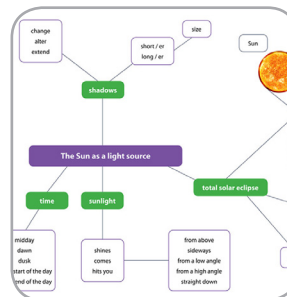## Films and audio in simplified English

Watch, listen and learn in English.

Click on the captions while watching to check the meaning of a word, or hear it pronounced again.
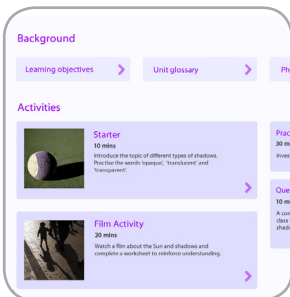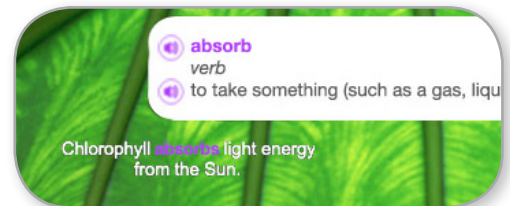
Lesson activities
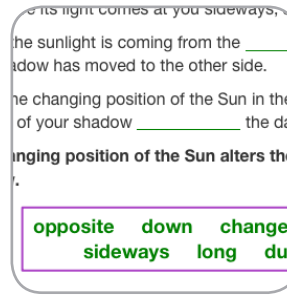
Clear, easy-to-follow teaching notes in simple English.

Phrase bank

Key verb phrases and sentence structures to help students build accurate sentences.

Practical activities

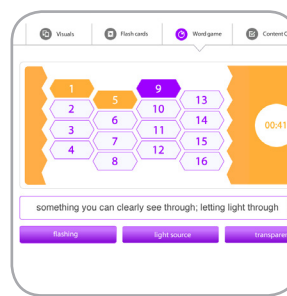Enquiry-based activities to boost both science and English skills.

Transcript exercises

Gap-fill exercises using film transcripts – versatile as a reading or listening exercise.
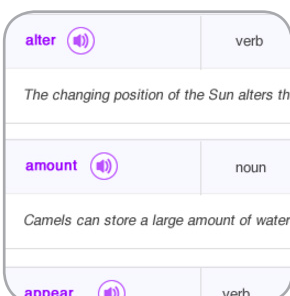
Activity sheets and classroom visuals

Engaging images and worksheets with built-in language support.

Interactives

Games, quizzes, and flashcards for practising key language.

Glossaries

Interactive glossary of scientific terms with audio samples to help students build their English skills.

tigtagworld.com