Úlla Beag
Green Schools Project
Energy Management

The Úlla Beag Team…

Úlla Beag

At Úlla Beag our philosophy is based on whole child learning by following the Aistear Early Years curriculum and Siolta Quality Framework.

We are members of Childminding Ireland , Registered and approved with the HSE and members of Early Childhood Ireland.

We also incorporate evidence based best practice within early years education such as large emphasis on outdoor activity; learning life long skills such as yoga, sustainable living, gardening , story making, puppet shows; arts & crafts; caring for animals – labrador, 8chickens ; 2 wormeries many visiting families of birds and lots of free play.

We integrate the children into larger social groups instead of separating toddlers from pre-schoolers etc. By including all children in this social setting children learn from their peers as well as older and younger children.

As we operate a much higher adult to child ratio then other services this ensures that we have a safe secure setting in which all children can play together. Parents feedback is that this is especially beneficial for siblings who otherwise would be placed in separate rooms and not get a chance to socialise with each other during the day.

This also creates a sense of familiarity and a more homely natural environment for the child's day.

We do ensure that all activities are age appropriate – example at baking time the younger children will get a wooden spoon and a bowl and make imaginary pies!

We also have full use of the gardens and lots of outdoor toys when the weather is good!

We are a registered Big Toddle Group with Barnardos and host our annual Big Toddle events in June each year.

Denise Sheridan

Owner & Childcare Manager. Mum to Ruby, Max & Oscar

Schoolage Childcare Fetac 5	Early Childhood Ireland
Certificate in Informal Siolta application	Early Childhood Ireland
Diploma in Child Psychology	ATI
Yogic Storytelling	
Breath Rock Draw Self regulation for kids	TLC
Working with Children with ASD: Play & social skills and Behaviour management	CEIS
Clinical Specialist in Art; Play & Bibliotherapy	TLC
Adv. Diploma in Inclusive Education	Queens University
Adv. Childcare Management Major Award	FETAC Level 6
Childcare Supervisory Management	FETAC Level 6
Carers Practice	FETAC Level 5
Occupational First Aid	FETAC Level 5
Organic Gardening	FETAC Level 5
Certified in Ethics of Art & Play Therapy	TLC
Licensed Kindermusik educator	Kindermusik
Certified Kids Yoga & Meditaion Instructor	Aura Yoga
Búntus Sports for Preschool Certificate	Búntus
Teaching Happiness	ICEPE
Advanced Classroom Teaching Skills	ICEPE
Trained in HSE Child Protection	HSE
MBA Business Administration	Open University
BA European Studies	Univ. of Limerick

Current : Pre & Post natal Yoga; Yoga Therapy ; Expressive Art Therapy.

Rhona Sheridan

Class Lead & Kindermusik Educator Mum to Holly.

Working with Children with ASD: Play & social skills and Behaviour management	CEIS
Childcare Supervisory Management	FETAC Level 6
Carers Practice	FETAC Level 5
Occupational First Aid	FETAC Level 5
Kindermusik Educator	
Trained in HSE Child Protection	
Búntus Sports for Preschool cert	
Trained in HACCP	
BA English and Media	

Current Studies :

Advanced Childcare Management FETAC 6

ICEPE Teaching Happiness & Advanced Classroom Teaching Skills

Fiona Bourke

Classroom Lead Mum to Erin 21,Ronan 17, Conor 12

Adv Childcare Supervisory Management	FETAC Level 5
Occupational First Aid	FETAC Level 5
Trained in HSE Child Protection	
Year 1 Montessori Education 0-3 years	
Kindermusik Educator	

Claire Bolton

Student and mum to Sean 7

BA Early Childhood Studies	FETAC Level 8
Occupational First Aid	FETAC Level 5
Trained in HSE Child Protection	

Elaine McKeogh - Additional Support from Local Market Gardener and MSc in Organic Horticulture

WWW.ULLABEAG.IE

Energy Management @ Úlla Beag

Executive Summary

- **Litter , waste management and recycling program** maintained and grown to meet our growing population from 9 to 20 children per day**. Cost avoidance of €700 annually**
- **Heat Consumption** reduced by 1100 litres we saved 1.7 tonne of Co2**. €900 saving annually.**
- **Electricity daily consumption** reduced from 20 kW to 15 Kw**. €233 saving annually.**
- **Held our first Low Energy Pyjama Day –** no lights on from 8-18 saved 5 kW.
- Developed ; documented and rolled out an **Energy Management curriculum** with 12 individual projects.
- Rolled out a **Car pooling service** with no charge reducing our Carbon foot print by **0.837 tonnes of CO2.**
- Mapped our Energy Management program to **Aistear Learning Goals.**
- Created an **Energy Code;** Car Pooling Rhyme agus Fuinneamh Rapcheol.
- Rolled out a home survey and agreed an Energy pledge with our families.
- Active involvement with out parents
- Developed a dedicated Green Schools Committee webpage on our website www.ullabeag.ie

Energy Management – our project scope

- Design and development of an Energy management curriculum in 2012 -2013 school year to deliver our overall Aistear learning goals effecting Environmental awareness and management under the categories of Well being; Communication ; Identity and Belonging Exploring and Thinking. Roll out of this curriculum in 2013-2014 school year.
- As we have a strong focus on litter and waste management already, having received our first an Tasice's green flag which we are up for renewal this year with an Taisce and the Early Childhood Innovation Award in Environmental Awareness in 2012 we needed to ensure that our Energy Focus worked alongside and integrated well into our current curriculum and litter & waste management
- Challenges for us as Pre & Afterschool Educators:
  - Maintain and grow our litter and waste management.
  - Teaching Children at an age appropriate manner about how energy works effects of sun ; light ; water ; dark all on our every day lives and how we can manage our use of energy.
  - Deliver Aistear learning Goals and meeting Siolta Quality framework
  - Meet best practice Afterschool in line with Early Childhood Irelands Fetac Level 5 Afterschool care as completed in 2013
  - Design and deliver exciting project work at an age appropriate level
  - Extending learnings to home life
  - Active involvement with parents and other community members.
- Meet An Tasice's Requirements for our 2nd Green Flag in relation to Energy Management.
- The project themes and curriculum also needed to meet our after-schoolers requirements for energy management education
- Timeline 2012 – 2014 two years.

Key Benefits – Detail

- As all of our projects were delivered over a 2 year period while maintaining our Litter and Waste management focus we have shown sustainability , consistency and repeatability within our holisitic green schools program at Úlla Beag.
- **Carbon footprint reduced through carpooling** :
  - Total annual CO2 savings :2013 0.13 tonnes with 2 families
  - 2014 : **0.837 tonnes of CO2.** 15 times improvement year on year.
- **Heat management oil consumption reduction**
  - 2010-2011 2 full 1100 litres fills of oil €1800
  - 2011- 2012 installed new double glazed windows €1900 . Used 1.75 fills oil. €1475 Saving €325.
  - 2012 -2013 Used 1.5 fills. €1350. Saving €450
  - 2012 -2013 Used 1 fill. €900. Saving €900
  - 2012 – 2013 1 fill. €900. Saving €900. The payback from windows insulation and other projects rolled out to improve our heat management is being fully received in 2014 where we will make savings of €675 and our initial investment in the windows has been paid back.
  - By reducing our oil consumption from 2 to 1 1100 litres we saved **1.7 tonne of Co2.**
- **Electricity management**
  - Daily kWh reduced from 20 kWH in 2011-2012 :
    - to 19 kWh in 2012-2013
    - 15 kWh in Feb 2014
    - Potential to reduce to 5 kWh one day per week through low energy action

- Designed and delivered an Energy Management curriculum inline with An Taisce ; SEAI ; Aistear and Siolta best practice and learning goals.

Key Benefits Detail

- We were able to grow our ***litter , waste management and recycling program*** to meet the needs of our growing population Grown our litter & waste management capacity – we have grown from 9 children daily in 2010 to 20 currently and still meet all our recycling art projects needs and still only need a bi weekly refuse collection.
  - So cost avoiding of €120 per year on refuse collection by maintaining our bi weekly service and
  - €400 annually cost avoidance on purchasing compost as produce our own and local farmer now donates his compost twice a year to us.

- Planted Calendula plants from our own harvested seeds and compost for mothers day – **zero carbon footprint**☺

- Sent home saved wildflower and poppy seeds to our families – which allows them to reduce their ***carbon footprint*** also.

- Reducing our ***carbon footprint*** through introduction of a sustainable carpooling service. We reduced our overall carbon footprint as follows:
  - 2012-2013 school year . Car pooling Introduced . 12.6 gallons of fuel avoided which is 0.13 tonnes of Co2 2 families involved
  - 2013-2014 school year. Grown the carpooling service .83 gallons of fuel avoided which is 0.837 tonnes of Co2 and grown for 6 families involved

Key Benefits Detail

- Reducing overall ***heat consumption*** from two 1100 litre fills per year to one 1100 fill per year. 2011 1100 litres = €900 ; 2012 1100 litres = €1050; 2013& 1100 litres = €1200.
  - Euros saved year on year on oil from bills. • Reduction of oil consumption by 1100 litres through insulation projects ; room temperature management ; ongoing radiator management. 2011 1100 litres = €900 ; 2012 1100 litres = €1050; 2013& 1100 litres = €1200
  - Insulated school and house more to reduce heat consumption - new double glazed windows put in in 2011 –Full cost benefit achieved by end of 2013 where we
  - Sept – current room temperature management keep the main rooms at 18*c down from 22*c and toilet area up from 15*c to 18*c.
  - School side door in school insulated in Jan 2014.
  - New Tank insulation jacket 8/3/14 – keeps warm water warm for longer.
  - Further action garage insulation will be put in in April 2014 (directly underneath the preschool) key benefit of this will be in the winter months.

- **Low Energy days** – Mar 2014. (see full slide detail) Potential to save kHw

7/3/14 saved 5 kHw by not turning on lights from 08-18 ; not using washing machine ; using clothes line instead of dryer and not turning on dishwasher. Starting W.e7/3/14 we will do one low energy day per week Mar-Oct which will be a further annual saving of €78. While we can eliminate the use of the dryer on dry days we will still need to use the washing machine a d a dishwasher is more water conservative then using the sink for large washes.

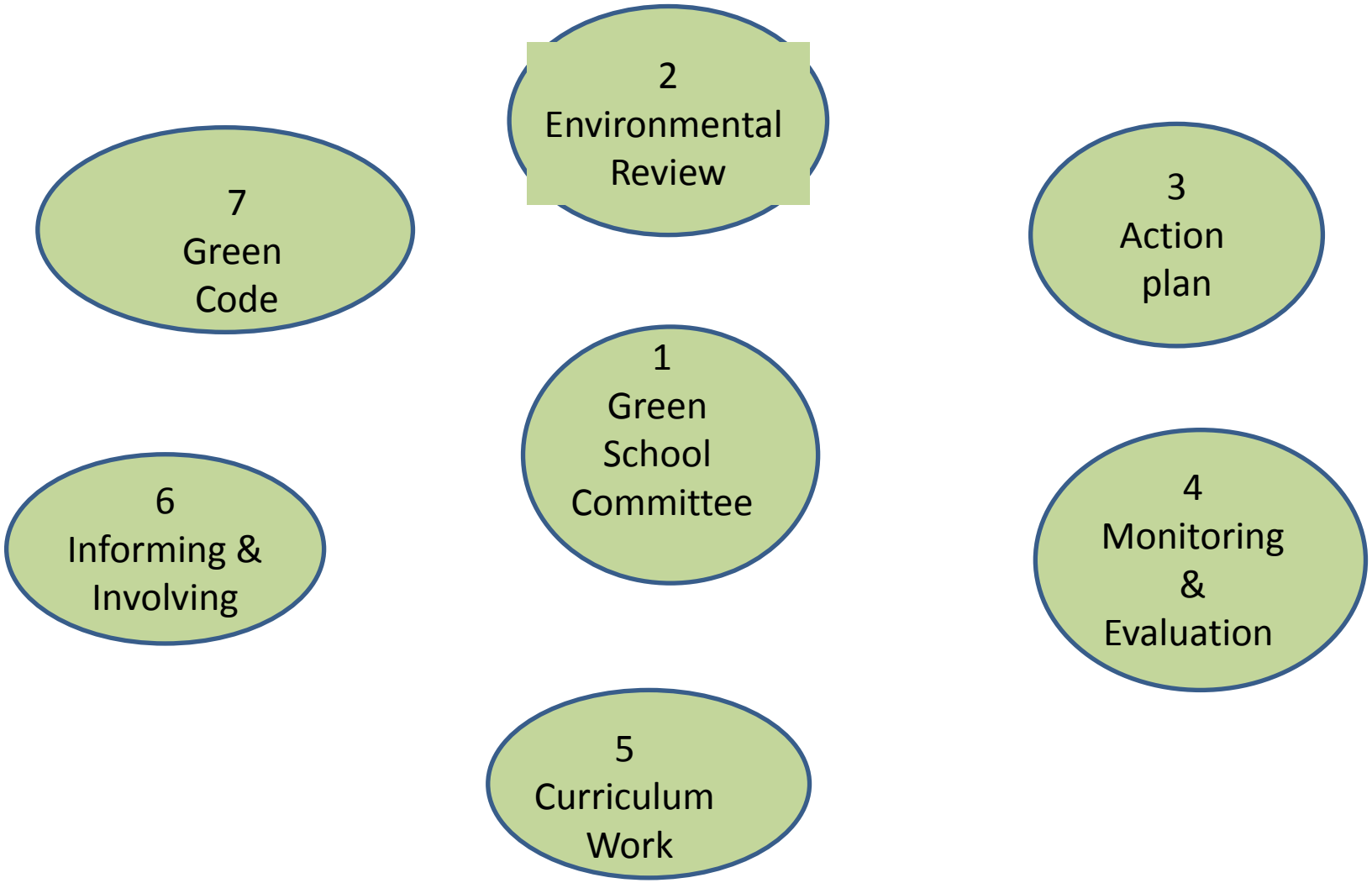
- Planted an apple tree for tree week Mon 3rd Mar and used our own wormery compost (takes approx 2 years as we recycle egg shells too to break down so our compost started in 2012 is now ready for use)

Key Benefits in our Curriculum Summary

- Developed a 5 sensory game linked to the environment – with my eyes closed how do I know that is is raining; sunny ; cold etc
- Developed an Ulla Beag Energy code
- Designed an Úlla Beag Irish Energy Rap
- Developed a lesson to explain carbon foot print to the children and integrating carpooling and RSA road safety training program Simon says.
- Arts & Crafts – our educational projects integrated energy management through visual learning by creating arts and crafts in line with the lesson taught –paper worms; flower and seed collages etc.
- Developed individual lesson plans for our projects which means they can be easily referred to and introduced in each preschool year ; are adaptable for afterschoolers as well as preschoolers and can be shared with other services.

Energy Management Code and Green School Committee

Implementing the Green School Programme :The Seven Steps



1.Green School Committee – Energy

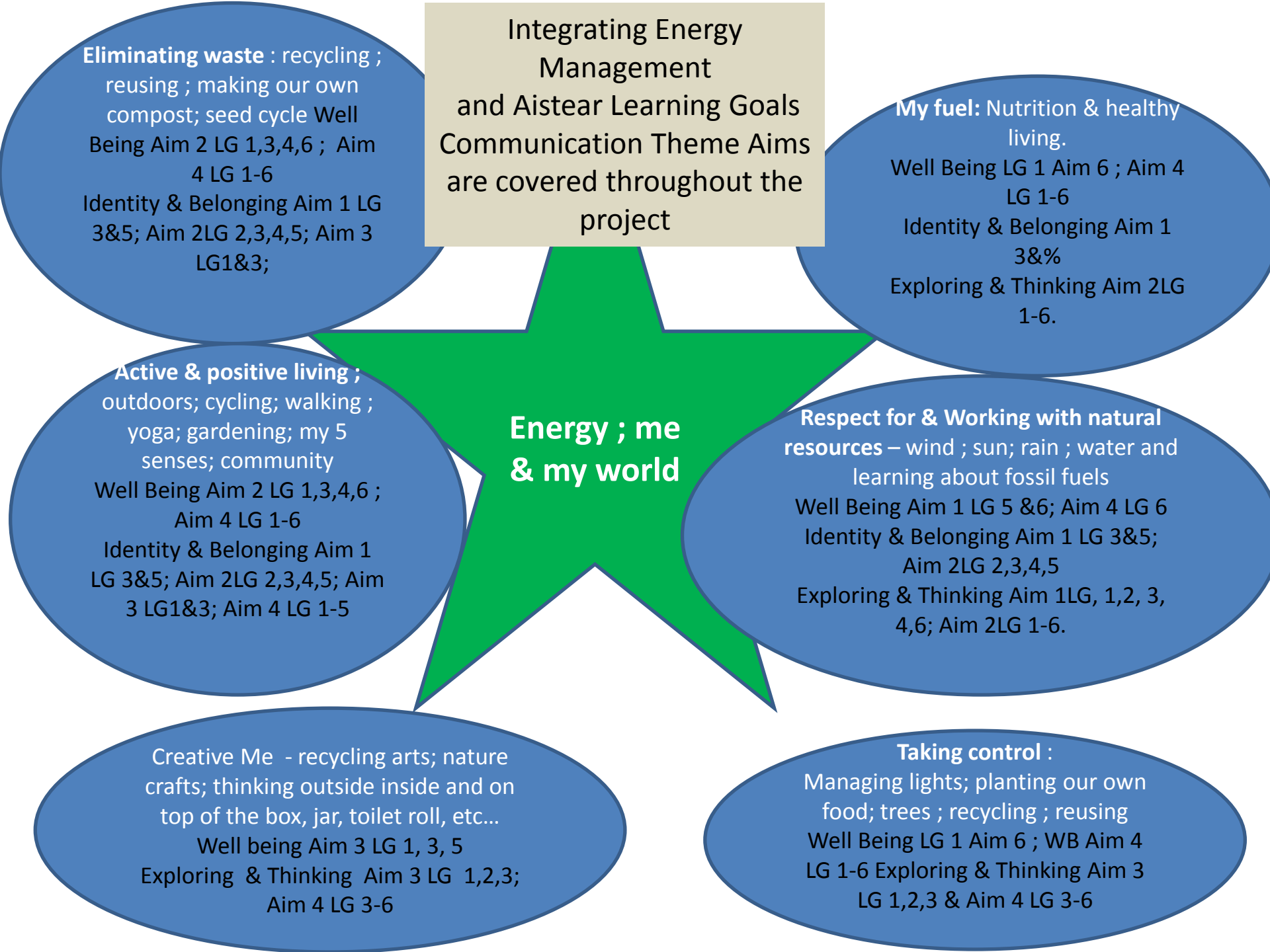
The committee is made up of the following people:

- Denise Sheridan Teacher :Committee Lead
- Nigel McKenna Parent; Implementation
- Rhona Sheridan Teacher ; Curriculum lead with Kids
- Fiona Bourke Teacher ; Curriculum Work with Kids
- Elaine McKeogh Volunteer MSc Organic Horticulture
- All school children are involved through projects and daily activities.

- Support & Advice received from Joan Tan Clare County Council – review day 25/2/14
  - Advice received on Khw ; filling in the application form ; feedback on code and advice on SEAI resources on energy for schools.

2. Environmental Review – Energy Management

- **Monitoring and Evaluating** We did not have an ongoing energy management review system.
- **Food , Heat & Electricity** are our biggest consumables for the school.
- **Car transport** -As families increase this would mean increased cars coming into Ulla Beag
- **Curriculum** – our current curriculum focuses on food management; seed-saving; growing in season crops there is no focus specifically on energy management – wind ; sun water end to end management of energy.


Integrating Energy Management and Aistear Learning Goals Communication Theme Aims are covered throughout the project
Eliminating waste : recycling ; reusing ; making our own compost; seed cycle Well Being Aim 2 LG 1,3,4,6 ; Aim 4 LG 1-6 Identity & Belonging Aim 1 LG 3&5; Aim 2LG 2,3,4,5; Aim 3 LG1&3;
My fuel: Nutrition & healthy living. Well Being LG 1 Aim 6 ; Aim 4 LG 1-6 Identity & Belonging Aim 1 3&% Exploring & Thinking Aim 2LG 1-6.
Active & positive living ; outdoors; cycling; walking ; yoga; gardening; my 5 senses; community Well Being Aim 2 LG 1,3,4,6 ; Aim 4 LG 1-6 Identity & Belonging Aim 1 LG 3&5; Aim 2LG 2,3,4,5; Aim 3 LG1&3; Aim 4 LG 1-5
Energy ; me & my world
Respect for & Working with natural resources – wind ; sun; rain ; water and learning about fossil fuels Well Being Aim 1 LG 5 &6; Aim 4 LG 6 Identity & Belonging Aim 1 LG 3&5; Aim 2LG 2,3,4,5 Exploring & Thinking Aim 1LG, 1,2, 3, 4,6; Aim 2LG 1-6.
Creative Me - recycling arts; nature crafts; thinking outside inside and on top of the box, jar, toilet roll, etc… Well being Aim 3 LG 1, 3, 5 Exploring & Thinking Aim 3 LG 1,2,3; Aim 4 LG 3-6
Taking control : Managing lights; planting our own food; trees ; recycling ; reusing Well Being LG 1 Aim 6 ; WB Aim 4 LG 1-6 Exploring & Thinking Aim 3 LG 1,2,3 & Aim 4 LG 3-6

Children's learning

Children in early years learn best through play , practical work and repetition therefore rhyming ; songs ; dance; rapping ; make and do ; digging etc all allow the child to enjoy the experience through a fun and exciting way learning holistically and processing and retaining information.

With this in mind we needed to create games; songs; rhymes and raps to help our children remember key learnings on energy management as follows……

Our Green Code …..

Úlla Beag

Ú can make a change

Look at the world around you

Love the world around you

Act now

Begin with our steps to making a change

Everyone makes a difference

And now

G Get going !!

Úlla Beag where children learn to care for and respect themselves, each other and our environment.

New Focus on Energy Code !

Begin with the Steps at Home

Energy Starts with me

By turning off lights and water

And being as Green as I can be

Úlla Beag where children learn to care for and respect themselves, each other and our environment.

Úlla Beag Fuinneamh Rapcheol
Úlla Beag Energy Rap

Múch an t-uisce

‘s an solas

Slan Abhaile

Dún an doras !☺

Our Steps to making a change…..

1. Turn off the light
2. Do not waste water
3. Think before you print & Use both sides of your paper
4. Reduce ; re-use; recycle
5. Recycle clothes & shoes
6. Turn that box into a rocket
7. Wellies – Family wellie recycling program & great plant pots
8. Milk cartons are bird houses or plant holders
9. Plant a native hedge
10. Set up an organic garden
11. Keep doors closed in winter
12. Get outside more

Úlla Beag where children learn to care for and respect themselves, each other and our environment.

Some Quick fixes learnt and implemented

- Energy-efficient light bulbs last about 10 times longer than ordinary bulbs and consume one fifth the energy. About 90% of energy used by traditional incandescent bulbs is wasted in the heat they produce. Completed Sept 2013

- Without insulation, water heaters may waste about 70% of the energy they use. Insulate the water heater if it feels warm to the touch. New insulation jacked applied to the school water tank. Completed Mar 2014.

- Lowering the school room temperature by 1 or 2 degrees could reduce your energy bill by 5 - 10%.

- Brainstorm to identify how we could reuse more products in the school ; empty twistable crayons; used matches; lollipop sticks; broken plunger handle; pencil toppings.

Installing the New insulation jacket in the school water tank €15

Days of Action

Days of Action – detailed slides in deck

Completed

- Tree Week
  - Mon 3/3/14
- Co2 curriculum
  - Thurs 6/3/14
- Pyjama day
  - Fri 7/3/14

  After-schoolers Energy project day Wed 12/5/14.

Our first Low Energy Pyjama Day Fri 8/3/14 ☺

- Lights off all day 08.00-18.00

kHw saving 10 kWh which is 0.007 metric tonnes of Co2. €1.65 saving off Elect bill

(kWh conversion calculator :http://www.epa.gov/cleanenergy/energyresources/calculator.html#results.)

- Outside play and activities from 10.30-12.30 & 14.00-15.45
  - Hung out clothes demonstrating Wind Energy .
  - Did not use dryer which runs for 40 mins **€0.66 & 0.0007 CO2 saved.**
  - Chalk drawing of beds and sunflowers to highlight Irish Children's Hospice Home care.
  - Played basketball
  - Made bracelets
- Indoor activities

  Made a trash robot from recycled plastic bags and called him Sunny!☺
- Children wore PJs over their clothes so everyone had an extra layer of clothing.

Pyjama day of Action more photos

Making Sunny our rubbish bag monster:

Energy Management & Tree Week

Lesson Plan Title: *National Tree Week – focus on trees.*

Concept / Topic to Teach:

Trees in our world – why they are important, hands on study of a young tree, planting, looking at trees around us.

Importance of leaves and roots to trees and our bean plants

Target audience: Preschool – *3 to 5 years*

General Goal(s):

Focus on tree week – trees: uses and protection.

Plant an apple tree for Ulla Beag garden. Look at how trees change during the year. Focus on the seasons.

Specific Objectives:

Increase awareness of the importance of trees in our world.

Look at the structure of a young apple tree – identify roots, buds, leaves, branches.

Discuss the cycle of the seasons – changes it makes to trees.

Plant an apple tree in the garden as a group. Look at the stages and what it needs.

The examples in this lesson are:

Phase 1:

Focus on trees for National Tree Week. Why trees are important, what they need (water, food, light, heat). Plant an apple tree in the garden.

Phase 2:

Pot on the beans that were sown in week 1. Look at the growth so far and what the next needs are to keep growing (light, heat, food, water).

Phase 3:

Introduce water as an essential need for all plants. Introduction to water as a source of energy.

Required Materials:

Students' pre-requisite knowledge and skills:

Understanding of the seasons and how nature changes.

Basic understanding of water, its uses and its effects.

Basic understanding of trees – their structure and how they grow

Seven-Steps link:

Curricular Work

Can inform Environmental Review and Action Plan

Informing and Involving- Helps younger children understand the Energy Theme and how trees and water are needed in our world.

Introduce water as a source of energy/power.

Anticipatory Set (Lead-In):

Children recite their energy code.

Mini-quiz – 'who am I?'

Give clues of what 'I' do to elicit trees as the common link for all uses mentioned.

Energy Management & Tree Week

Step-By-Step Procedures:

Part 1:

Show the apple tree to be planted - discuss the parts of the tree and how they work and change through the year.

Plant an apple tree to mark National Tree Week. Group work to prepare the ground, look at the soil, worms etc, plant tree, fill, add compost from wormeries and water.

Part 2:

Pot on broad bean seeds into pots of compost for planting in garden in April.

Groupwork to tidy away extra compost, pots, recycle jars and put plant debris on compost heap.

Ground chalk artwork to draw a forest of many trees – varying colours, sizes etc.

Part 3:

'Who am I?' – mini-quiz to identify 'water'. Clues given eg. That both trees and beans need this… etc.

Identify uses of water – eg. For plants, washing, our bodies, making electricity.

Experiment – to demonstrate water as a source of power. Water wheel in basin – each child to pour over a jug of water and study the effect. What makes the wheel move?

Part 4:

Classroom activity – colour in parts of a bare tree diagram to show the changes through the year.

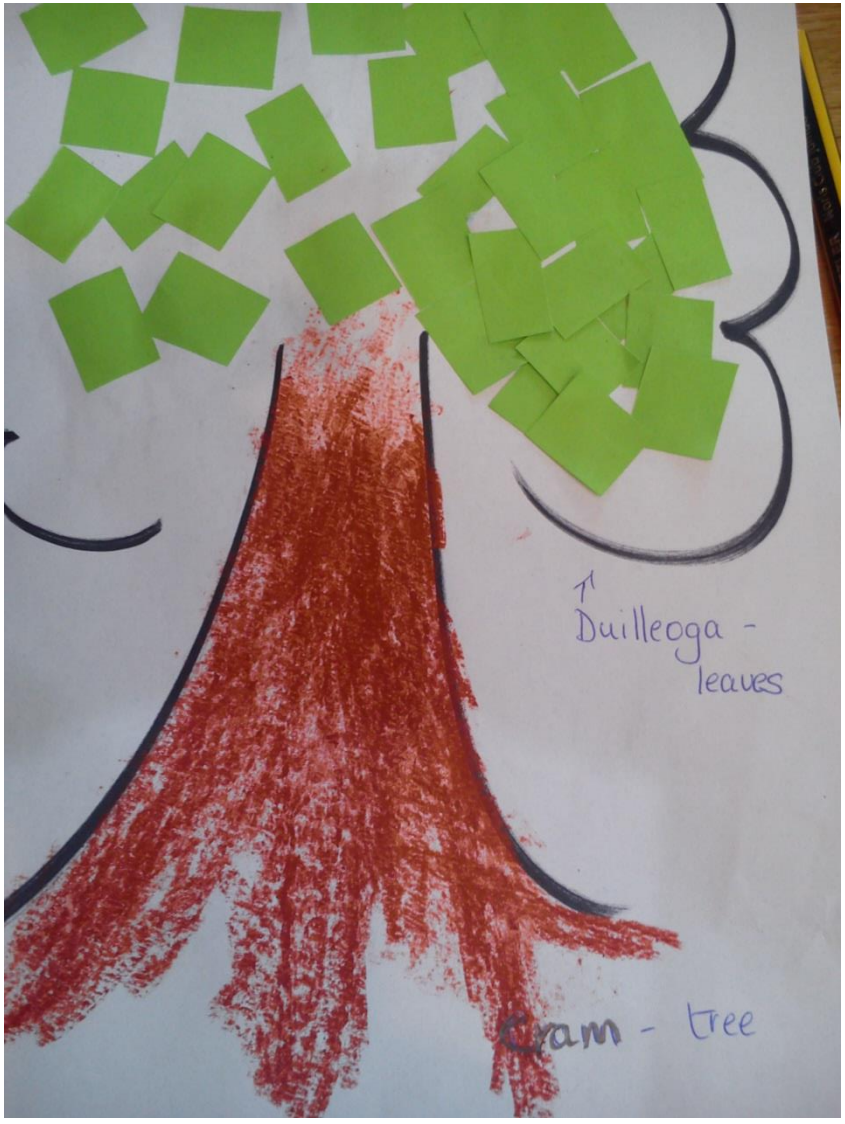
Planting our apple tree.

Examining and using Wormery compost.

Drawing Chalk trees.

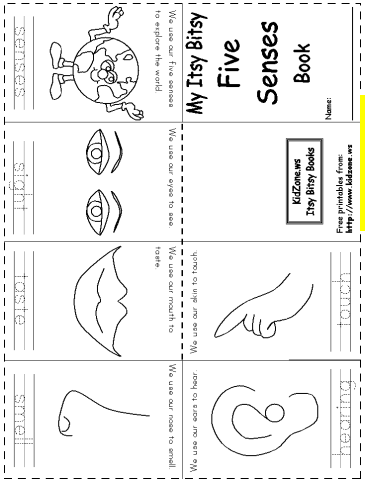
Our Pre-schoolers representation of the four seasons in the life of a tree – includes discussion on Wind; Sun; Rain on the trees life cycle

Energy &Tree week integrated with our weekly Irish class



Úlla Beag 5 senses game – played outside & inside .

Linked to holistic wellbeing of child and how the we fit into the world around us and can work with natural energy ; wind sun rain



This little booklet can also be used with the game. Source kids zone

- Outside : (inside us props – warm window for sun ; teacher blow air for wind: sprinkle water for rain etc)

Children stand in a circle with hands stretched out and eyes closed.

  - How do I know if it is windy when my eyes are closed?
  - How do know its sunny when my eyes are closed?
  - How do I know its raining when my eyes are closed?

  Answers : hear; feel; taste(rain);smells (wet ground; grass etc)

  Extend to emotional well being - how does heat make me feel ?how do I feel when I am cold or wet?

- Children stand in a circle with hands stretched out and cover their ears?
  - How do I know if it is windy when my ears are covered?
  - How do know its sunny when my ears are covered?
  - How do I know its raining when my ears are covered?

  Answers : see ; feel; taste(rain); smell (wet ground; grass etc)

  Extend to emotional well being - how does heat make me feel ?how do I feel when I am cold or wet?

- Children stand in a circle with hands stretched out and close their eyes and cover their ears?
  - How do I know if it is windy when my eyes and ears are covered?
  - How do know its sunny when my eyes and ears are covered?
  - How do I know its raining when my eyes and ears are covered?

  Answers : see ; feel; taste(rain).

  Extend to emotional well being - how does heat make me feel ?how do I feel when I am cold or wet?

Afterschoolers Energy Day of Action Tuesday 11/3/14

For these projects we used reusable kits and recycled water bottles. The kits allow the Children to be really challenged by reading instructions following the photos; trial and error While at the same time we are recycling old bottles; learning about energy management and setting up temperature monitoring systems.

Project 1 : Trash Robots - Ciara (4) ; Eoin & Sean (6)

Challenges : Reading instructions ; clicking parts into each other ; fitting the bottle ; making cardboard arms and sticking eyes and stickers to the bottle.

Utilises : Processing skills; fine motor skills; reading skills and promotes team work.

Green Theme : Recycling and creativity.

Aistear Themes:

Wellbeing Aim 1 LG : 5&6 ; Aim 2 LG 3&4 Aim 3 LG : 1,3,5Aim4 LG 1-5

Identity & Belonging Aim 1 LG 3&5; Aim3 LG 3 ; Aim 4 LG : 1-5.

Afterschoolers Energy Day of Action Tuesday 11/3/14

- **Project 2 : Mini Weather Station Eimear(7) Ryan (6) ;Ruby (7) ; Fiona – Teacher**
- **Challenges** : Reading instructions ; clicking parts into each other ; fitting the bottle ;
- screwing in ; joining multiple parts
- **Utilises :** Processing skills; fine motor skills; reading skills and promotes team work.
- **Green Theme :** Recycling and creativity.
- **Aistear Themes**:
- Wellbeing Aim 1 LG : 5&6 ; Aim 2 LG 3&4 Aim 3 LG : 1,3,5Aim4 LG 1-5
- Identity & Belonging Aim 1 LG 3&5; Aim3 LG 3 ; Aim 4 LG : 1-5.

After schoolers Energy Day of Action Tuesday 11/3/14

- **Project 3: Light bulbs from recycled bottle : Niamh (4);Daniel (6); Max (4)**
- **Challenges** : Reading instructions ; clicking parts into each other ; fitting the bottle ;
- painting the bottle; twisting in the bulb to top of bottle
- **Utilises :** Processing skills; fine motor skills; reading skills and promotes team work.
- **Green Theme :** Recycling and creativity.
- **Aistear Themes**:
- Wellbeing Aim 1 LG : 5&6 ; Aim 2 LG 3&4 Aim 3 LG : 1,3,5Aim4 LG 1-5
- Identity & Belonging Aim 1 LG 3&5; Aim3 LG 3 ; Aim 4 LG : 1-5.

After schoolers Energy Day of Action Tuesday 11/3/14

- **Project 4: Making a temperature monitoring station Eoghan (11) Abbey (8)**
- **Challenges** : Reading instructions ; clicking parts into each other ; fitting the bottle ;
- Joining the thermometer pieces together ; twisting in the pieces to top of bottle; ingoing monitoring
- **Utilises :** Processing skills; fine motor skills; reading skills and promotes team work.
- **Green Theme :** Recycling and creativity.
- **Aistear Themes**:
- Wellbeing Aim 1 LG : 5&6 ; Aim 2 LG 3&4 Aim 3 LG : 1,3,5Aim4 LG 1-5
- Identity & Belonging Aim 1 LG 3&5; Aim3 LG 3 ; Aim 4 LG : 1-5.

Energy Action- Electricity reduction & Education

Electricity Management Lesson Plan

Lesson Plan Title: *Electricity - uses and management*

Concept / Topic to Teach:

- Water power – uses of electricity, practical applications, saving electricity
- Link to reducing use of fuel – eg. Carpooling, reducing pollution

Target audience: *Preschool – 3 to 5 years*

General Goal(s):

Focus on electric energy, uses of electricity and ways to save energy.

Specific Objectives:

- *Increase awareness of use of electricity, sources of electricity through discussion, activities and group work to highlight importance of energy conservation.*
- *Conduct simple experiments to demonstrate how electricity works.*
- *Focus on energy saving measures – what can we do.*

The examples in this lesson are:

Phase 1: Focus on electrical energy. Consider when we need power every day and when we use other ways of meeting our needs (eg. Jumpers, walking). Reinforce through simple experiments.

Phase 2: Practical ways to reduce energy use –

Measure amount of electricity used in one hour on school meter.

Match pictures to show how Guzzler uses too much electricity.

Electricity Management Lesson Plan

Required Materials:

- *Students' pre-requisite knowledge and skills:*
- Use of recycled items.
- Basic understanding of electricity, its uses and its effects.

Seven-Steps link:

- *Curricular Work*
- *Can inform Environmental Review and Action Plan*
- *Informing and Involving- Helps younger children understand the Energy Theme and electrical energy/power.*

Anticipatory Set (Lead-In):

Children recite their energy code.

Discuss pictures of activities – which need electricity and which don't?

Step-By-Step Procedures:

Part 1:

Static electricity –

Experiment rubbing balloon on jumper and sticking it to wall/making hair stand up. What is making that happen? Can you see electricity?

Kinetic electricity –

Demonstrate use of a torch. How to switch it on/off – what can it do?

Follow up demonstration using a battery/wire/bulb to show how the power comes from the battery, through the wire to the bulb.

Game – catch the light beam on the floor

Electricity Management Lesson Plan

Part 2:

Discuss what is needed to make electricity – eg. Water, wind, coal, battery, diesel, petrol power.

How can we measure how much we are using? Intro school meter.

Experiment –

Measure the electricity used at the start and end of one hour. Note that the numbers get bigger on the meter – shows that we are using electricity in school.

Identify ways to use less electricity –

Task –

Identify which activities use electricity again – how could we change how much we use???
Stop Guzzler – think up ways to stop him guzzling power.

Activity –

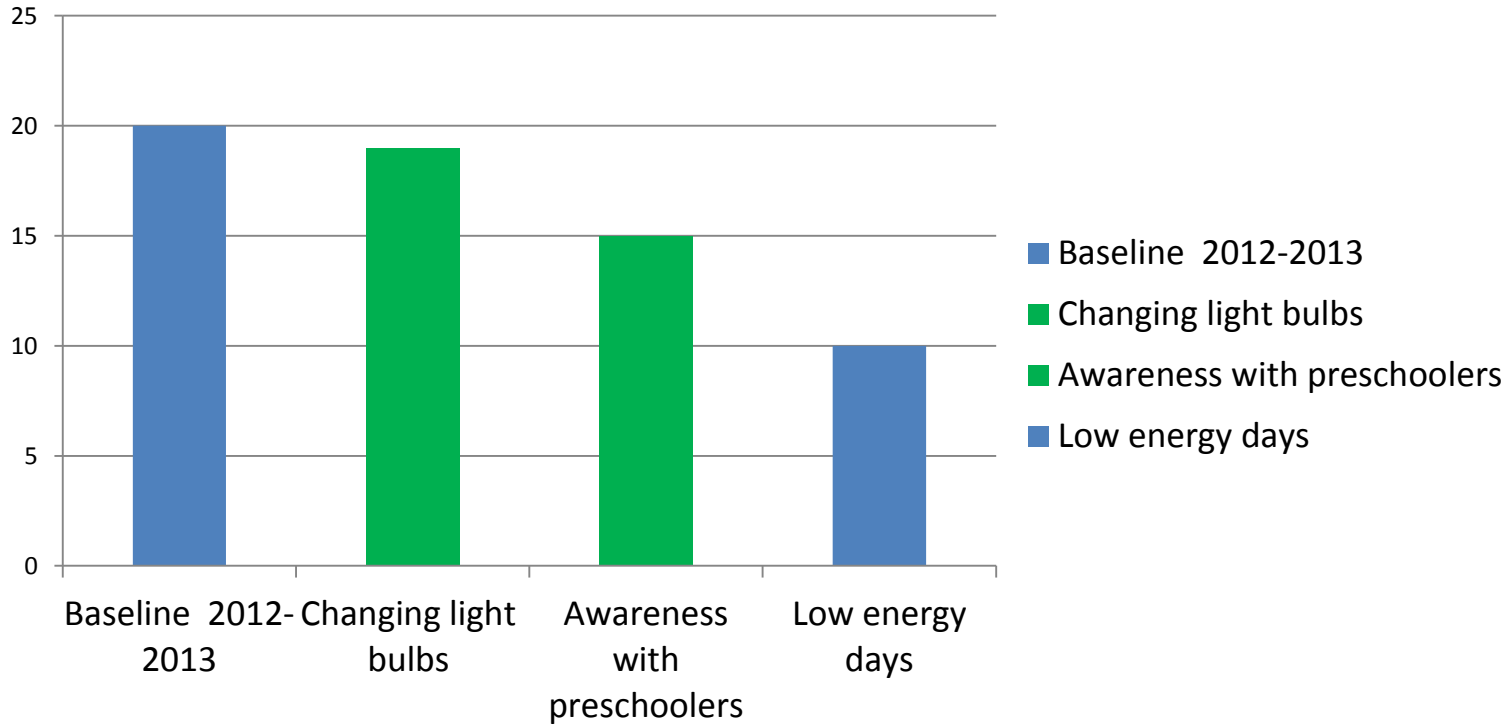
From list of ways to reduce electricity use – make up wall chart showing ideas to cut our power use (eg. Warm clothes, unplug at night etc., carpooling, walking, cycling to get around).

Group movement –

Exercises outdoors – show that we are warmer when we are moving. We can make our own power.

Electricity Usage Analysis 2013-2014 showing savings to date

- Sept 2013 Change all lights from 100w standard bulb to 20 watt CFL light bulb. Saved 1kHw per day. Annually €57 saving.
- Dec & Jan 2014 Rolled out awareness campaign and education with preschool leaders and pre-schoolers on smarter use of lights and using washing machine only with full loads. Saved 4 kHw per day. €165 saving per year (adjusted saving removing increase in standard unit rate =€162 savings annually.)
- Low Energy days – potential to save a further 5 kHw per day. Starting W.e7/3/14 we will do one low energy day per week Mar-Oct which will be a further annual saving of €78



Lessons learnt

- 2013 our annual kHw was 7,692. €1,253. This is the equivalent of 5.4 metric tonnes of Co2.
- Analysing our esb bills and usage over the Winter months of Oct to Dec 31 –our average daily usage was 20kHw/ 0.14 CO2. €4.84 per day on electricity. Our hourly unit rate increased from 1st of Feb from 0.1628 c per kHw to 0.1659 c per kHw which projects 2014 usage costing us €1,276.10
- Sept 2013 CFL bulbs replaced all standard bulbs this reduced our daily consumption to 1 kHw. Annual saving €57. The CFL bulbs cost €5 per bulb and we replaced 10 bulbs so total output was €50 . Saving in 2013 was €5. Cost avoidance in 2014 from continued use of CFL will be €57. New Baseline 19kHw Jan 2014.
- From the start of February 2014 we have reduced our average daily use to 15kHW through more use of natural daylight ; rolling out our turn off the light switch campaign with our pre-schoolers which is a daily saving of 4kHw ; maintaining this annually this would be a saving of €233.
- Over 50 weeks (we provide service over 50 weeks) in the year we could save €394 by not using lights; washing machine; dishwasher or dryer between 08.00-18.00 daily. As this is not feasible all year round a more realistic outlook would be from Mar to Oct which would be 32 weeks in the year we could save €252.17.
- Co2 emissions produced from 31 Dec 13 – 03rd Mar 2014 per month Wh is 0.470t. If we reduce our annual bill by €252.17 + €233.

What is 1 Khw – Afterschoolers lesson & share with parents source: An Tasice Green schools

- By becoming energy aware at home and in school, you can save money and help combat climate change. The first step to saving energy is knowing how much you use in the first place.

- **How we measure electricity**

  Electricity is measured in units. Each unit is equivalent to **1,000 watts of electricity used for one hour** - or one kilowatt-hour (kWh).

- **What do I get for 1 kWh?**

1 kWh in	**Lasts for**
an instant electric shower	7 to 10 min
an immersion water heater	15 to 20 min
a large ring on an electric cooker	20 to 40 min
a kettle	20 to 40 min
a tumble dryer	20 to 40 min
a two-slice toaster	40 to 60 min
a washing machine	70 to 100 min
a dishwasher	70 to 100 min
a desktop computer & monitor	4 to 6 hours
a 28-inch TV	6 to 9 hours
a 100 watt standard lightbulb	10 hours
a 20 watt CFL lightbulb	50 hours

Electricity kWh Savings

Usage	Read on	Reading @ 8am	Day on day usage	Standing charge	24 hour unit charge	Total kHw € per day
04-5/03/2014	05/03/2014 @ 08.00am	28857	baseline	44.7 c/day	16.59c	
05-6/03/2014	06/03/2014 @08.00 am	28872	15	44.7 c/day	16.59c	2.4885
06-07/03/2014	07/03/2014 @08.00 am	28886	14	44.7 c/day	16.59c	2.3226
07-08/03/2014	08/03/2014 @08.00 am	28891	5	44.7 c/day	16.59c	0.8295
					Saving	**1.57605**

Fun experiments with electricity - Balloon and creating static electricity

Partnership with Parents

Identifying opportunities for active engagement with families outside of school:

Carpooling

Home Survey & findings

Energy management pledge

Sharing Tips

Green School Page on www.ullabeag.ie

Partnership with Parents

Car Pooling & understanding CO2 emissions

Project 6 Car pooling photos

"We are Carpoolers; We share our car ;less car trips makes us better by far!"

Integrated carpooling and seat belt safety into our program of RSA Simon says which we do twice a year with the children.

Car pooling detailed lesson plan

Lesson Plan Title: *Car Pooling what it is and why it is importance*

Concept / Topic to Teach:

- Car pooling ; fuel consumption
- Understanding fuelling the body and fuelling items
- Understand CO2 and why it is bad for the environment

Target audience: *Preschool – 3 to 5 years*

General Goal(s):

Focus on CO2 and ways to reduce it.

Specific Objectives:

- *Increase awareness through discussion, activities and group work to highlight importance of energy conservation.*
- *Develop a game to show how carpooling workds*
- *Focus on what can we do.*

The examples in this lesson are:

Phase 1: *Each preschool child receives a toy car; bus or boat and discussion on what they need to make them move.*

Then the children have to organise the vehicles based on size from largest to smallest.

Children play on the cardboard road map which we created with them in October 2013 inline with our Roll out of Simon Says Road Safety Program.

Phase 2: Introducing the concept of carpooling

Cars take in Fuel use up what they need and push out smoke which represents CO2 through the exhaust pipe.

To demonstrate this a toy block is placed on each car to represent the amount of CO2 which is released.

Role platy then takes place of all the children driving to Ulla Beag versus those cars meeting me and one car driving with the car-poolers to Úlla Beag

Car pooling detailed lesson plan

Phase 2: *Introducing the concept of carpooling continued*

- Demonstrate effect of multiple cars going to one location – traffic jams ; each car producing one block unit of CO2 .
- Challenge the children to come up with ideas of how to reduce the CO2,, allow them to grasp the concept of car pooling themselves understanding less cars are better.
- Discussion on the impact of CO2 release on the sky.
- In simple terms explain CO2 is released and goes up into the sky and if we continue to produce the sky will get grey and we wont see the sun.

Part 3 : Reminisce on previous lessons – what did we learn that the seed needs ; what about the power of the sun; impact of the sun on our emotions etc…..

End lesson plan with recital of carpooling rhyme.

Úlla Beag Co2 lesson

Car Pooling : Transport and Carbon emission management

Car pooling - increased from 2012-2013 to 2013-2014 as follows:

Sept 2012- June 2013 :

Preschool Pick up at OGNS 2 families :

O'Briens 2 children 2 days per week

Lynches 1 child 3 days per week

Average 3 trips per week. 456 km in the year. 60 km/gallon therefore 7.6 gallons avoided annually which is 0.078 tonnes of CO2.

Drop back to OGNS @ 13.40 : 1 child 2 days per week. 76 trips saved per year 304 km per week.60 km per gallon. Therefore 5 gallons of diesel avoided which is .051 tonnes of CO2.

Total annual CO2 savings : 0.13 tonnes of CO2.

Sept 2013 – June 2014 :

Preschool Pick up at OGNS 2 families :

O'Briens 1 child 5 days per week & 1 child 2 days per week.

Lynches 1 child 5 days per week.

Mahers 1 child 5 days per week.

Harveys 1 child 5 days per week.

Kelly 1 child 5 days per week.

Heffernan 1 child 2/3 days per week.

30 avoided trips per week / 120km per week – 38 weeks per year 1140 trips saved in the year 4,560 km per year. 60km per gallon. Therefore 76 gallons of diesel avoided. This converts to 0.7855 tonnes of CO2 per year. see calculator detail on next slide.

Drop back to OGNS @ 13.40 : 2 children 2 days per week / 8km per week.

76 trips saved per year 304 km per week.60 km per gallon. Therefore 5 gallons of diesel avoided which is .051 tonnes of CO2.

Total annual CO2 savings : 0.837 tonnes of CO2. 15 times improvement year on year.

Converting Diesel/Petrol avoided into tonnes of CO2

http://www.icbe.com/carbondatabase/volumeconverter.asp

Partnership with Parents

Home Survey

Project 4 : Do You Save Energy?

Home Survey

Úlla Beag Energy saving survey at home	A Lot	Not often	Never
I turn off lights when no one needs them.			
I unplug appliances that I'm not using.			
I turn off the TV or radio when not in use.			
I put on a sweater or sweatshirt when I'm chilly.			
I close outside doors when the heat is on.			
I turn the water off while I brush my teeth.			
I take quick showers or limit water in the tub.			
I carpool, walk or ride my bike when possible.			
I help recycle: cans, newspaper, glass, and plastic.			

Congratulations! If you have ticked "A Lot" at least 4 times You are an Energy Star!

What other creative ideas for saving energy in homes of the future?

Survey findings

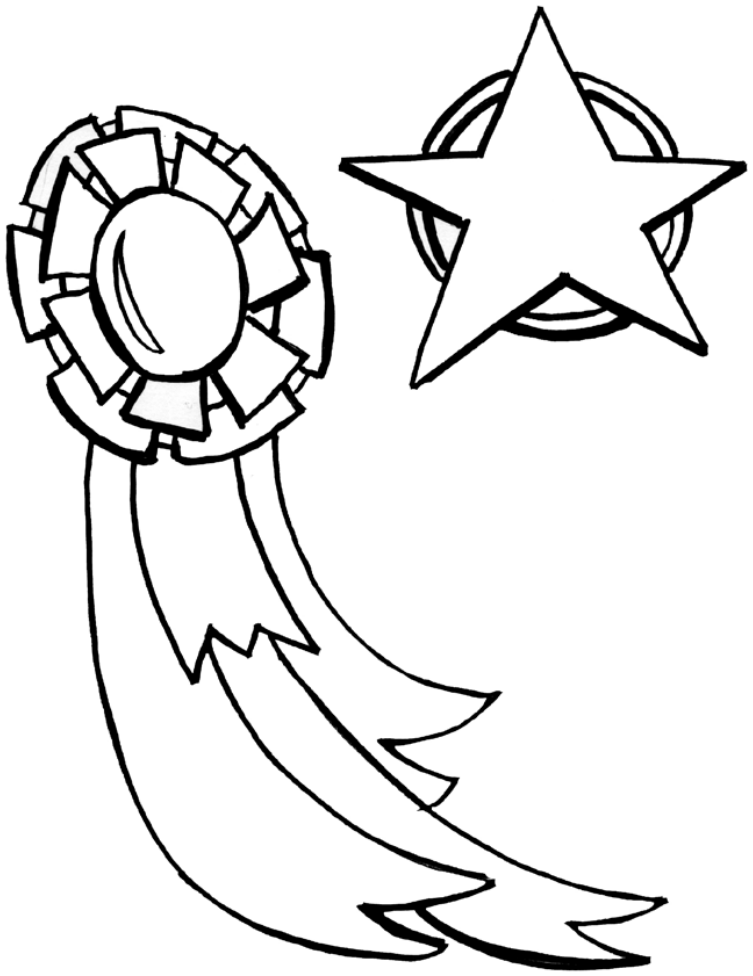
- Areas for improvement :
  - Turning off lights
  - Closing doors
  - Turning off water when brushing teeth

Do You Save Energy?

Energy Award

Congratulations! If you have ticked “A Lot” at least 4 times You are an Energy Star!

What other creative ideas for saving energy in homes of the future?



□□ **ENERGY AWARD** □□

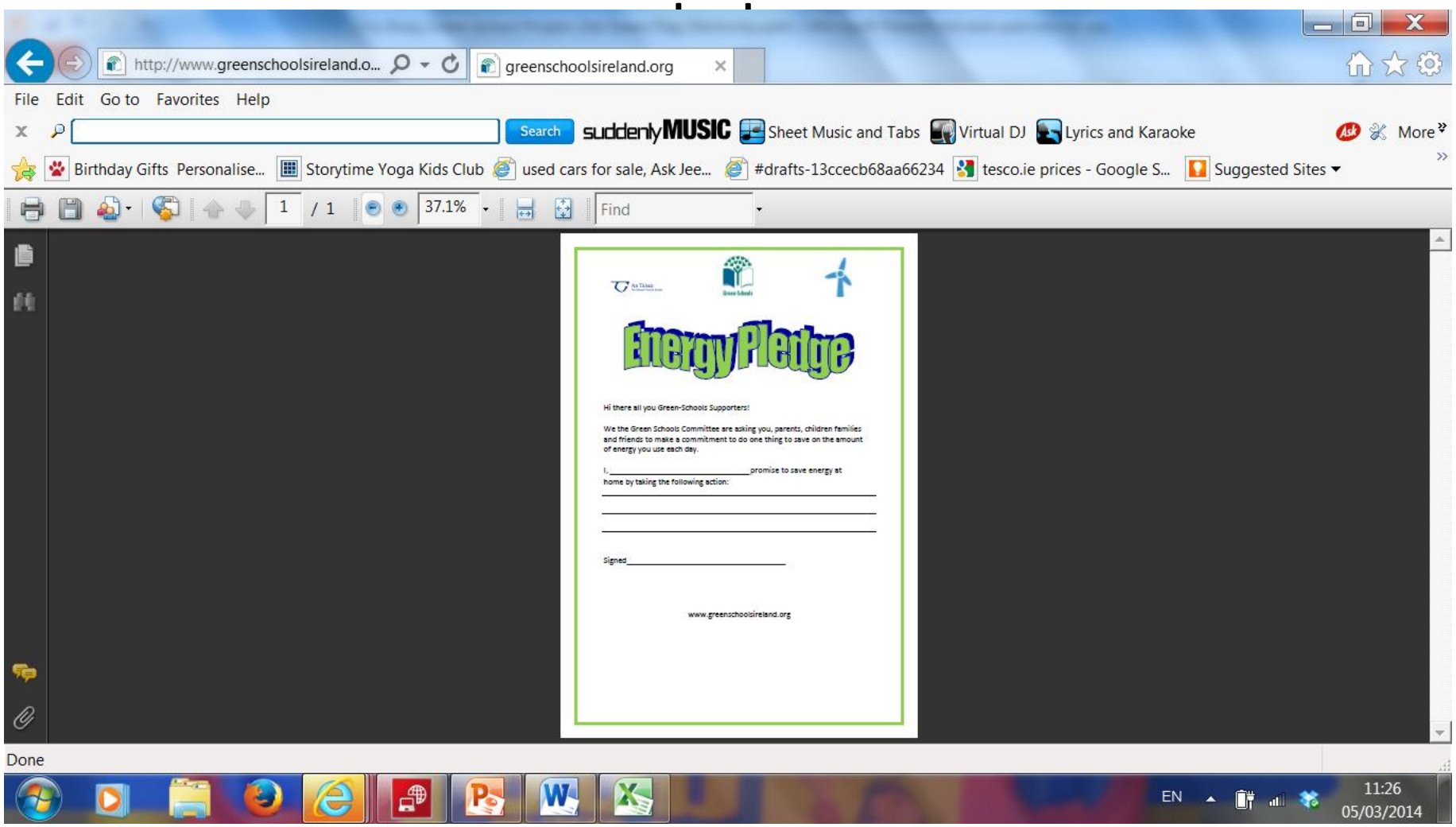
_____

PRINT YOUR NAME

I help save energy in my home.
Congratulations!

□□□□□

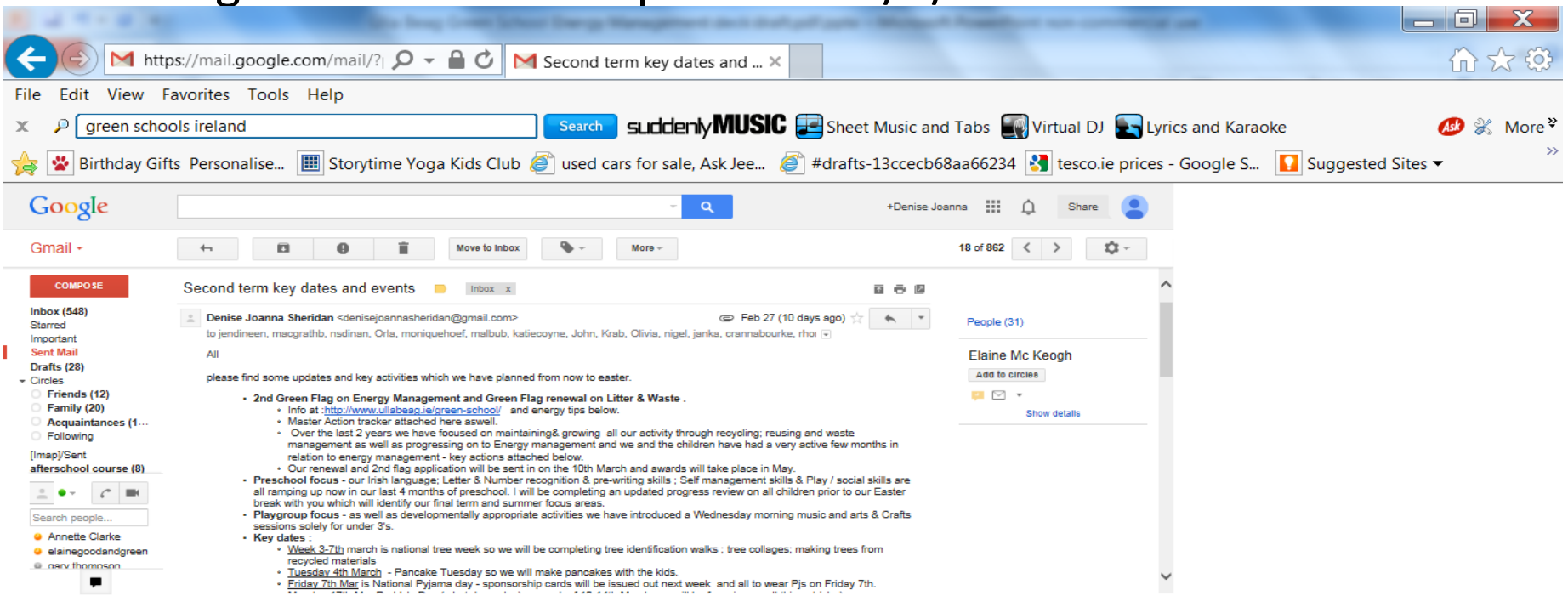
Our Energy Pledge – Each family sig ned a

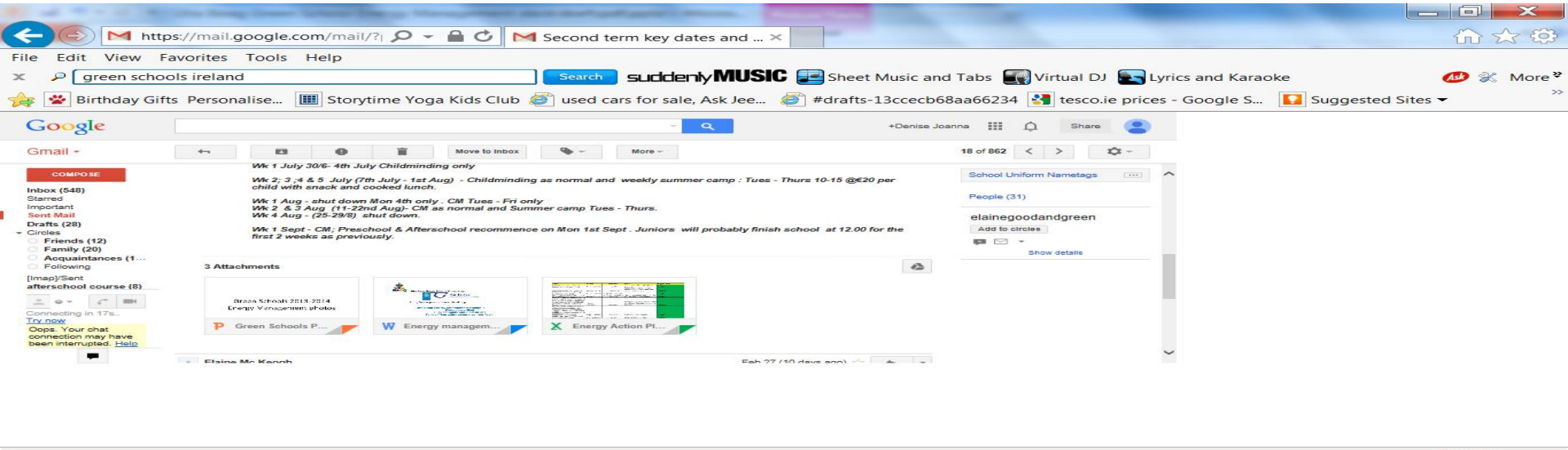


Partnership with Parents

Sharing Best Practice

Sharing information with parents 27/2/14 Email communication





Energy management Document shared 27/2/14

Úlla Beag Energy Management Pledge :

Keep doors Shut
Turn off lights when not in use
Turn off Tap water when brushing Teeth

Energy is fundamental to the way we live our life today. Electricity is an amazing resource and should be used efficiently both at home and in school. Here are a few tips to help you use energy more efficiently and save money too.

Some facts & figures:

- The recommended temperature for classrooms is 18ºC. Every 1ºC increase in temperature over the above figures could add up to 10% to cost of heating bills;
- A photocopier left switched on overnight wastes enough energy to make 5,300 A4 copies.
- The average person in America uses 15 times more energy then the average person in Turkey;
- It is estimated that we only have enough oil in the world for another 50 years;
- On average, a car in Ireland travels 20,000km a year, releasing 2,895kg of carbon into the atmosphere.
- Ireland imported 89% of its energy needs in 2008.
- Fossil fuels accounted for 96% of all energy used in Ireland in 2008.
- Oil is the most dominant energy source used in Ireland.

Energy is all around us, and comes in different forms – heat (thermal), light (radiant), mechanical, electrical, chemical and nuclear energy. We use energy for everything we do, from running to catch a bus to cooking a pizza, from flying a kite to sending astronauts into space! Although there are many forms of energy, most can be put into two categories, kinetic (motion) and potential (stored). Perhaps your class can carry out a project examining different forms of kinetic and potential energy in more detail?Energy is present in every living system.Almost everything you eat can be traced back through the food chain to the sun. Energy changes form at each step in the food chain. Energy flow in living systems enables humans and other organisms to survive. Living systems use energy to grow, change, maintain health, move, and reproduce. The amount of energy that makes it from one level in the food chain to the next can vary, but will generally average about ten percent. Human societies, like natural ecosystems, need energy to organise and maintain themselves.

Energy management Document shared 27/2/14

General Tips :

Water:

A dripping hot water tap wastes energy and in one week wastes enough hot water to fill half a bath, so fix leaking taps and make sure they're fully turned off!

Turn off taps - wasting water wastes electricity as a huge amount of electricity is used daily in supplying water and cleaning it after use

Lighting:

Save 75% on lighting costs by replacing all standard incandescent light bulbs - (regular

screw-in light bulbs) in your home with compact fluorescent light bulbs (CFLs - oftentimesthe curly or squiggly bulbs).

Make sure to turn off all lights when you leave the room or when they are not in use.

Appliances and Electronics:

Unplug electronics, battery chargers and other equipment when not in use. Together, these small items can use as much power as your refrigerator. (Examples of electronics are computers,blenders, toasters, hair dryers, television, stereo, cell phone adaptors, video games etc).

Enable "power management" (sleep mode) on all computers and make sure to turn them off at night. A laptop computer uses up to 90% less energy than bigger desktop models.

Plan what you will be getting out of the refrigerator BEFORE you open the door. Try to keep the refrigerator door closed as much as possible.

Locate air leaks in your home by holding a lit incense stick next to windows, doors, attic hatches,and other locations to see the direction of the smoke stream. If the smoke stream travels horizontally,you may need extra caulking, sealing or weather stripping to seal the air leak.

Water and Water Heater Usage:

Turn your water heater down "Normal" setting when home, and to the lowest setting when away. Water heating accounts for about 13% of home energy costs.

Wash your clothes in cold water. About **90%** of the energy used in a clothes washer goes to water heating.Use high speed spin option on washer, if available.

Air dry clothes whenever possible.

Run your dishwasher and clothes washer only when fully loaded. **Fewer loads will help to reduce your usage of energy and water.**

Take shorter showers and use less water in the bathtub

Energy Management tips shared 27/2/14

In Winter : Keep The Cold Out

- Keep windows and doors closed to prevent the loss of heated air.
- Close curtains and window coverings at night,and open them during the day.
- Dress comfortably for the weather.
- Put a sweater on or other warm clothing to avoid turning up the heat (health permitting).
- Use an extra blanket while sleeping or to cuddle up with during the day.

In Summer : Keep The Cold In

- Turning the thermostat down by 1°C can reduce your heating bills by 10%.
- Maximize natural light.
- Turn off all unnecessary lights.
- Keep windows and doors closed to prevent the loss of cooled air.
- Adjust, and preferably close, as many blinds and windows coverings that receive direct sun during the daylight hours.
- Note: Do this in rooms where lights do not need to be on.

Sharing Energy management tips - Mon 10th mar

What consumes the most electricity in your household? Swap your hungriest appliances for more energy efficient ones. The first step to saving electricity is understanding where it's being used in your home. This should give you a good picture. **On average, you could save 6% on your electricity bill.**

Our homes are full of appliances that use energy all the time

You TV, DVD and hi-fi use energy when not in use - up to 90% in standby mode (In some households, it's the equivalent of leaving a 100W light bulb on all year.) Generally only the following appliances need to be powered all the time:

- Home security systems and sensor lights
- Gas and oil boilers & heating controls
- Remote garage door openers
- Standby reduction devices

Everything else, like your TV, can be switched off at the wall. To help reduce your energy use further, buy models with low consumption and switch them off the wall when not in use. You'll be surprised how much you save!

Appliances that use power continuously but can be switched off:

- Computers
- TVs, VCRs, DVD players and recorders
- Stereos
- Game consoles
- Battery and phone rechargers
- Plug-in air fresheners
- Breadmakers
- Coffee makers
- Microwaves - if the clock isn't needed
- Hand-held vacuum cleaners
- Rechargeable toothbrushes

Curriculum

Expand current curriculum to include Energy Management

Integrating existing Recycling and Waste Management into Energy Management

Integrating Green Management into our overall Aistear Focus

Identifying opportunities for active engagement with families outside of school

Green Schools Committee meeting November 2013 Brainstorm on Curriculum guidelines

- Age appropriate projects – not too complicated as we could loose the audience
- Denise & Elaine to document lesson plans
- Elaine will be the gardening expert
- Rhona to integrate lessons into arts & crafts
- Fun and easy follow
- Needed to document our project plans and lessons to allow sharing
- Would be great if the projects while meeting the requirements of the 2-5 year old could also be adaptble to 5+ yrs for afterschoolers.
- Need to integrate energy into Litter & Waste management
- Need to meet Aistear learning goals
- Need to meet An Taisces requirements for renewal of first flag and application for energy flag

Green Schools Committee meeting Feb 2014 following our visit from Clare County council

- Need to ensure energy savings are represented in kWh – Denise
- Need to design a lesson plan on Co2 & kWh-Denise
- Roll out the lesson plan – Denise & Fiona
- Expand Úlla beag code to specify Energy focus – Rhona
- Include SEAI early years reading material to further understanding of Energy impacts – Rhona
- Fiona & Denise to look at an Irish rap to include Irish integration into Energy management focus.

Integrating Energy management into Úlla Beag Curriculum 12 Projects with Individual lesson plans – over December 2013 to April 2014

Project 1: Food production – growing beans and chitting potatoes. Effect of darkness & heat on bean production and light on potatoes.

Project 2 : The production of microsystems: Wormeries

Project 3 : Seed saving – Macrosystems the full food cycle & Home survey

Extension into home management – mini survey and family commitment to one change.

Energy Awards

Project 4 : Wind management – Wind Vanes and Wind mills

Project 5: Water management – straws ; sail boats bird feeders; water dishes.

Project 6: Carpooling and Carbon Footprint reduction. Road Safety integration.

Project 7:Recycling – coffee/tea/ pencil sharpenings all used as compost and mulch for potted plants.

Project 8: Butterfly Feeder &Bird Feeders and water dishes

Project 9: Ladybird houses – recycled cardboard and glass jars. For here and home. Heat management

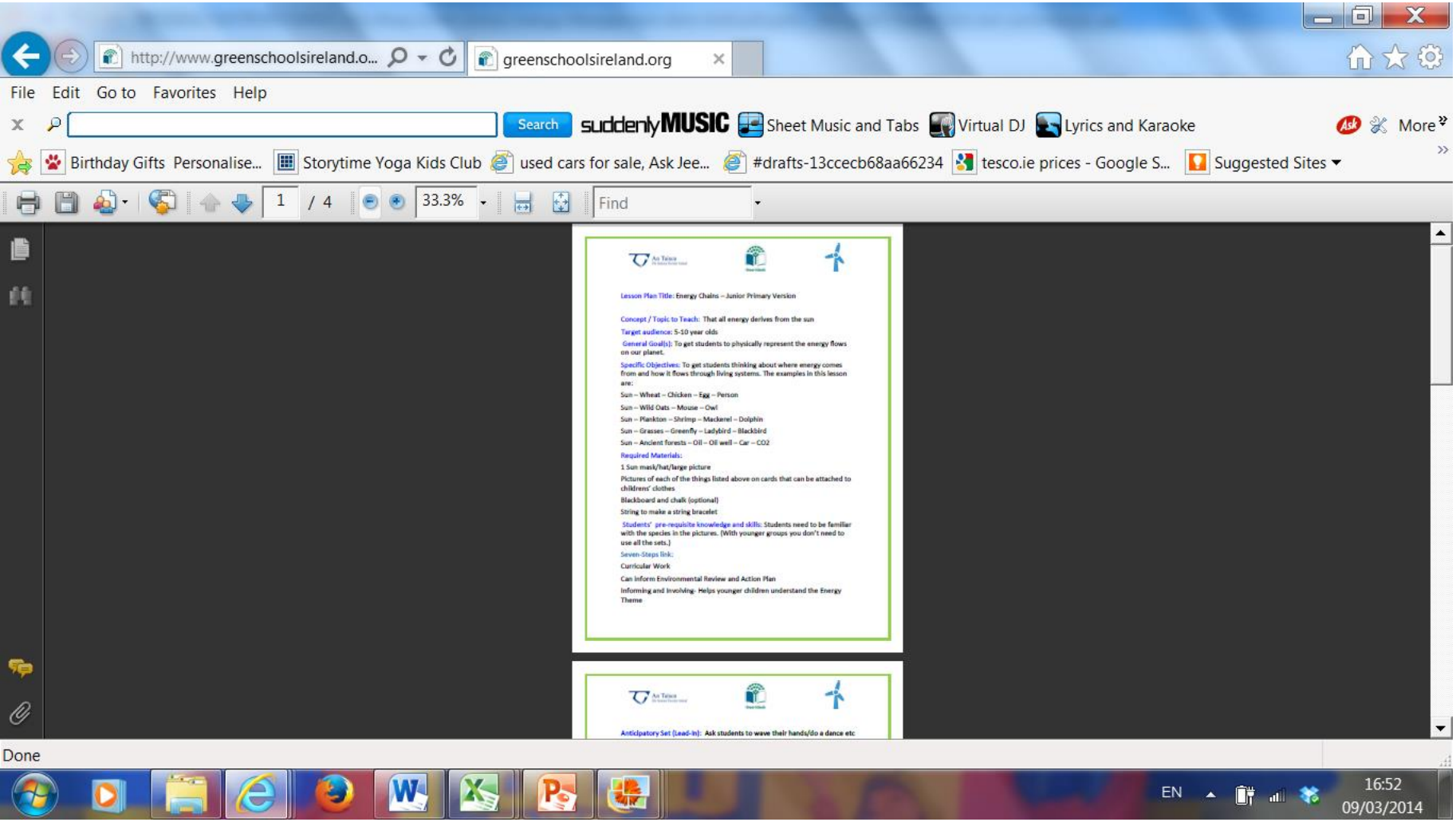
Project 10 : Herb Garden – macrosystems. Cuttings to take home.

Project 11: Magentism – floating butterfly.

Project 12: Cooking in the sun – Energy for me & using natural energy sources to melt marshmallows; chocolate ; heat up water ; melt ice etc. How Energy transforms matter.

Project rolled out

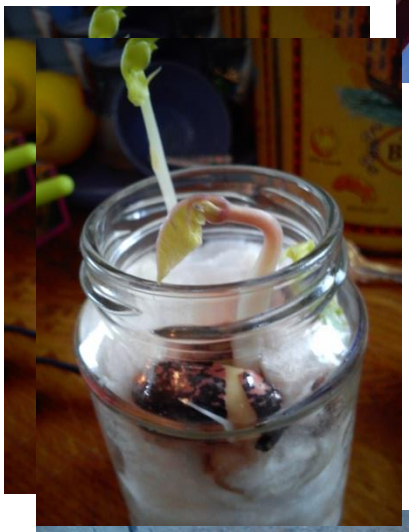
An Taisce Master Lesson plan template for Green Schools project work – detail to be captured



Project 1 : Food Production and Energy Management

Project 1 : Food Production and Energy
Bean sprouting and potato chitting

- **Concept** – Energy management sowing beans and chitting potatoes.
- **Objectives:**
  - ❑ Introduce Energy management through visually planting beans examining the effect of light ; dark ; water and heat on beans and potatoes.
  - ❑ 4 week project to understand the effects of light and heat for potatoes and darkness and heat followed by light for bean sprouts .
  - ❑ Integration of energy management with recycling – use of recycled jars to plant beans; recylcled toilet rolls for potatoes.
  - ❑ To get preschoolers thinking about where energy comes from – light from sun ; heat from oil ; darkness in cupboards



And how it flows through living organisms.

Beans – placed in glass jar with soaked cotton wool. Left in a dark heated cupboard for 2 weeks.

Darkness encourages the seeds to look for light and sprout.

Once taken out they have sprouted root and shoot – photo.

Then they need light and water are needed to grow successfully.

Potatoes need light to sprout 4 weeks on average.

Food production & Energy management Lesson Plan detail

Lesson Plan Title: Energy management and food production.

Concept / Topic to Teach: Sowing Beans and Chitting potatoes.

Target audience: Preschool – 3 to 5 years and Afterschoolers 5-10 year olds.

General Goal(s): To bring an understanding to children visually by planting beans in glass jars and chitting potatoes in cardboard.

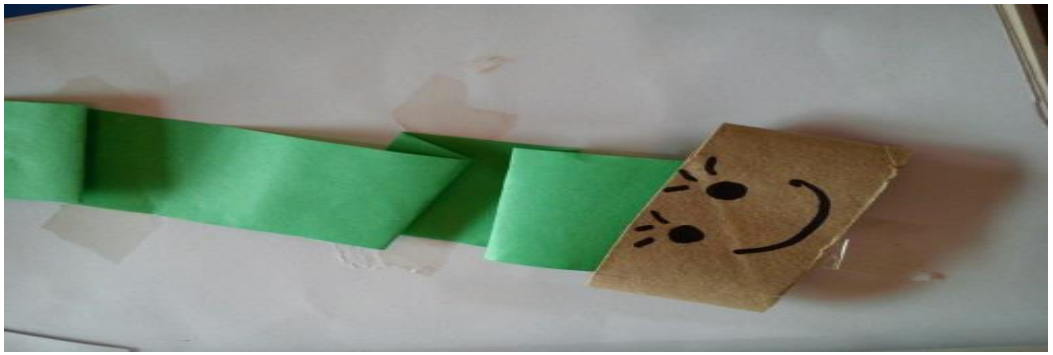
Specific Objectives:

- Helping Children to understand how light , darkness and heat are all energy types which impact our food production.
- Understanding how at different stages of the food production different types of energy are needed
  - Darkness ;
  - Water
  - Sunlight
- Intregrating Energy management into Úlla Beag's existing Green code – Organic gardening and Litter & Waste management by utilising used toilet roll inserts for the potatoes and recycled glass jars for sprouting the beans.
- To get students thinking about where energy comes from and how it flows through living systems.
- Integrating Energy management into Arts & Crafts – the children drew what the life cycle of the bean.

Photos potting out our bean and pea shoots 4 weeks after we first potted them in glass jars.

Potato Chitting

Project 2 : Wormeries



Wormeries and Energy management plan detail

Lesson Plan Title: Alternative energy – ‘worms – the earth’s plough’.

Concept / Topic to Teach:

Nature’s workforce – resources in the soil to save energy. Eg. Worms, bees, beetles, even slugs – all have a job in the soil. No diesel required.

Target audience: Preschool – 3 to 5 years

General Goal(s):

Focus on natural energy in the soil and how this is used in growing.

Specific Objectives:

Increase awareness of the work that worms do and their effects on the soil.

Think about what they do and how they recycle plant material.

Make classroom wormeries to study worm habitat and see how they make tunnels.

- **Song:** ‘There’s a worm at the bottom of the garden’.
- **Craft activity** to make a worm from recycled toilet roll inserts and paper.

The examples in this lesson are:

Phase 1: Focus on machines that work in the soil – eg. Tractors, trailers,

ploughs, lawnmowers. They all need fuel (diesel) to work. Think about worms and how they work in the soil – no fuel required, except old/dead plants.

Phase 2: Make classroom wormeries – as per instructions.

Ongoing care to add water daily. Will observe in two weeks to see tunnels in the layers and see the movement of the worms through the soil/sand layers.

Phase 3: Make a 3D worm from strips of paper, toilet roll insert and colour around the ‘ground’ on the page to make a home for the worm.

Wormeries lesson plan continued

Required Materials:

Students' pre-requisite knowledge and skills:

- Use of recycled items – plastic bottles, toilet roll inserts
- Worms, soil (2 types), sand, leaves, black paper

Seven-Steps link:

- Curricular Work
- Can inform Environmental Review and Action Plan
- Informing and Involving- Helps younger children understand the Energy Theme and consider alternatives to using engines.

Anticipatory Set (Lead-In):

- Children recite their energy code.
- Discussion of story book 'Tractor in trouble'
- Talk about the work of tractors and farm machinery. What do they need to work?
- Discuss other workers on farms that don't need diesel – eg horses, worms.

Step-By-Step Procedures:

Part 1:

Make wormeries. Group activity as per instructions. Turn taking to fill the layers. Build up the completed wormery – 2 groups. Follow instructions to complete the task and focus on ongoing care needed over extended period – ie. Keep in dark and give water daily.Song – 'There's a worm at the bottom of the garden'

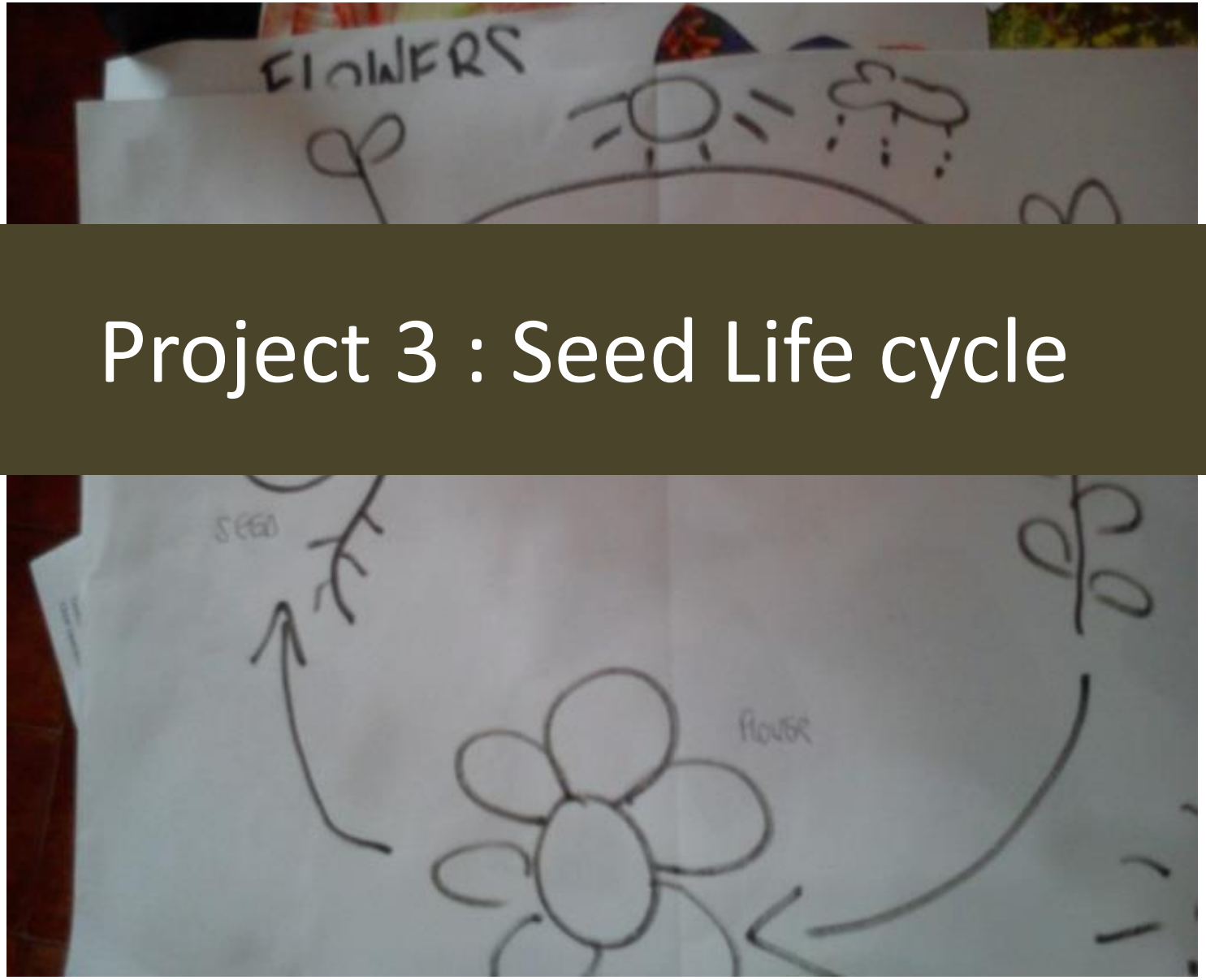
Part 2:

Make 3D worm from paper and toilet roll insert on A4 page. Decorate, give it a face and draw its habitat around it.

Making our Wormeries photos

Our complete Wormeries

- Photos show soil mixed up by the worms and worms moving around in tunnels.



Project 3 : Seed Life cycle

Project 3 :Seed Life Cycle

Concept / Topic to Teach:

Life Cycle of a Seed – Impact of Sun; Wind; Rain; Shelter etc on our harvested seeds.

Target audience: Preschool – 3 to 5 years

General Goal(s): Focus on impact of energy on the life cycle of the seed.

Specific Objectives: Increase awareness of seed

Conduct simple experiments to show how wind influences wave power.

Craft activity/science experiment to make and test a hand held windmill.

Make an indoor butterfly windcatcher.

The examples in this lesson are:

- Start the cycle by planting your seed. This is the very beginning of the whole process.
- The seed will need water and warmth to continue in its cycle.
- The next step to the life cycle is germination. This cycle starts when the seed starts to accept the water and nutrients.
- The next part of the cycle is the seed will form its roots. The roots . will provide the seed with everything it needs to grow.
- The next part of the life cycle is to start growing.
- The leafs will start underground. It might sound strange but the leaves really do form underground. The seed will now need to get the strength to push these leaves above ground. Once the leaves sprout from the ground your plant will start to grow

Project 3 lesson plan detail continued

Seven-Steps link:

- Curricular Work
- Can inform Environmental Review and Action Plan
- Informing and Involving- Helps younger children understand the Energy Theme and wind as a source of energy/power.

Anticipatory Set (Lead-In):

Children recite their energy code.

Children get to make a Life cycle of Seed collage and draw their own interpretations of the life cycle.

Use harvested seeds which the children collected in October &November 2013.

Step-By-Step Procedures:Part 1:

Part 1 :Song & Yoga Movement: Use Small Brown Nut song from Julia Donaldson

Moving like seedlings Role play time children get to sway in the wind; bask in the sun; shiver in the rain etc.

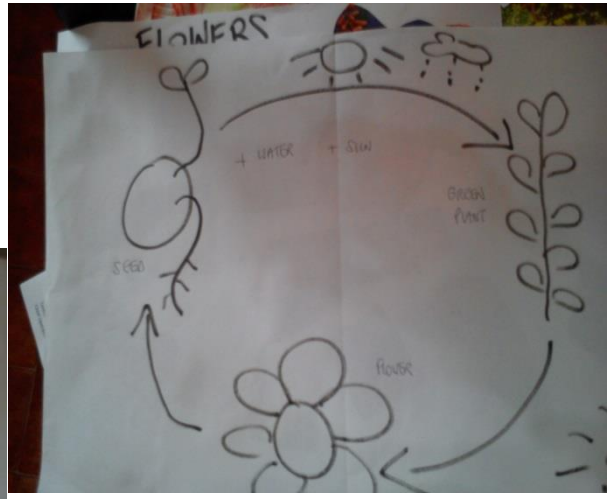
Part 2 : Plant our saved Calendula seed in recycled yogurt pots for mothers day.

Part 3 : Once seedlings become established decorate yogurt pots with children.

Part 4 :Read Eric Carle Little Seed book

Project 3 : Seed management

- Seeds harvested by the children in Nov & Dec 2013
  - Fennel
  - Sunflower
  - Calendula



Pre-schoolers Visual representation of Seed Life cycle

Proud of our seed life cycle collages

Our calendula seedlings 4 weeks later

Project 4 : Wind Energy

Project 4 :Wind management lesson detail

Concept / Topic to Teach:

Wind power – uses of wind, experiments using wind power

Target audience: Preschool – 3 to 5 years

General Goal(s): Focus on energy cycles using wind power and how this is used in daily life.

Specific Objectives: Increase awareness of wind power and its effects, through discussion, song, dance, experiment and craft activity.

Conduct simple experiments to show how wind influences wave power.

Craft activity/science experiment to make and test a hand held windmill.

Make an indoor butterfly windcatcher.

The examples in this lesson are:

Phase 1: Focus on wind as a source of energy and a force in nature. Consider its effects and how we use wind every day (eg. Electricity, sailing boats, waves).

Reinforce through song, movement game and with simple experiment.

Phase 2: Make a handheld windmill, using paper, plastic straw and modelling clay. Handwork skills and construction practice to assemble. Test the windmill outdoors to feel the wind in action.

Phase 3: Make a window hanging butterfly wind-catcher using recycled materials.

Required Materials:

Students' pre-requisite knowledge and skills:

- Use of recycled items.
- Basic understanding of air movement and its effects.

Project 4 lesson plan detail continued

Seven-Steps link:

- Curricular Work
- Can inform Environmental Review and Action Plan
- Informing and Involving- Helps younger children understand the Energy Theme and wind as a source of energy/power.

Anticipatory Set (Lead-In):

Children recite their energy code.

'Making waves':Using a straw to blow onto a tray ¾ filled with water. Notice the 'waves' on the surface made by the power of the wind.

Discuss pictures of sailboats, surfers, windfarms etc – what makes these work?

Step-By-Step Procedures:Part 1:

Song: Kite Activities and Wind Theme Music and Movement

Blow, Blow, Blow the Windby Diane Thom-- Sung to Row, Row, Row Your Boat

Blow, blow, blow the wind Gently through the trees.

Blow and blow and blow and blow.How I like a breeze!

Blow, blow, blow the clouds,Blow them through the sky.

Blow and blow and blow and blow Watch the clouds roll by!

Moving like Kites

Materials Needed: CD with different tempos of music.

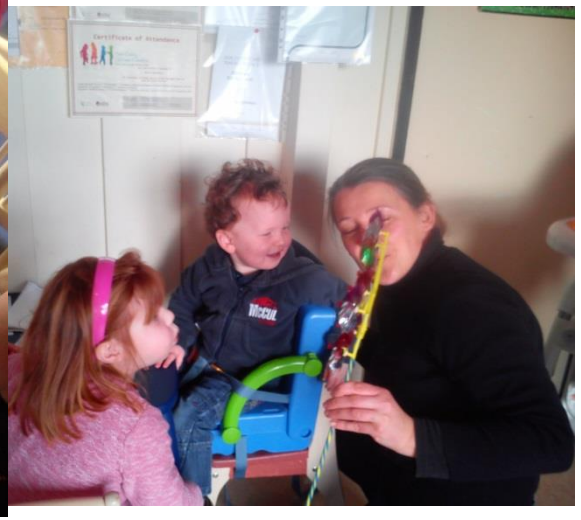
Have the children "move like kites" based on the tempo, slow, medium, fast.

Name movements as they do this: The kites fly up, up, up and then glide slowly down and around....

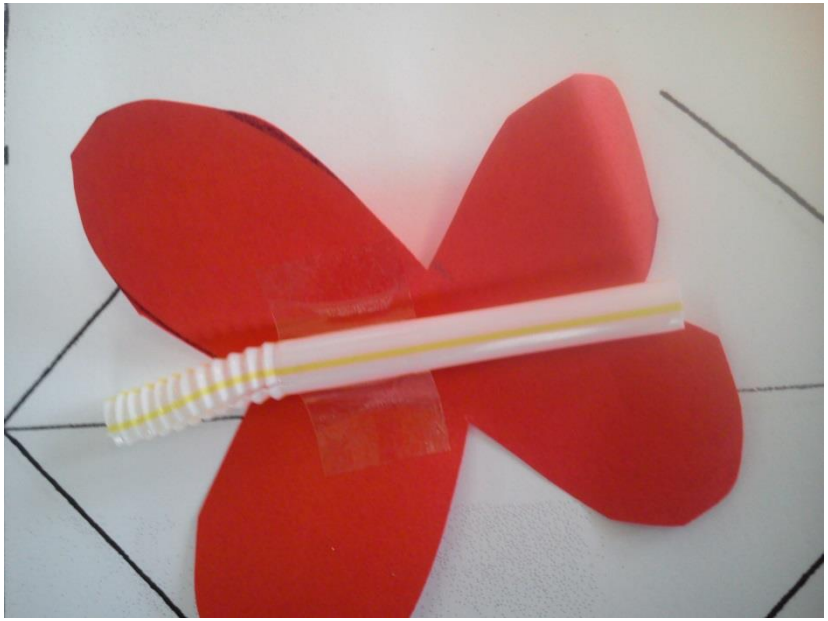
Part 2: Make a handheld windmill using plastic straw handle, paper and modelling clay. Decorate the windmills before assembly. As per instruction sheet. Test these outdoors to see the effect of the wind.

Part 3: Make a window hanging butterfly windcatcher using recycled materials

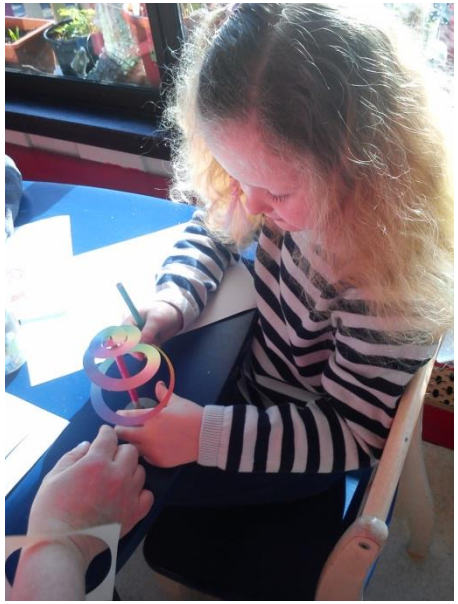
Project 4 Wind: Wind mill photos



Project 4 Wind :
Paper butterflies photos



Making Paper Wind Vanes



Washing Line

Project 5 : Water Energy

Project 5 Water management Lesson detail

Lesson Plan Title: Water energy, uses and management

Concept / Topic to Teach: Water power – uses of water, practical applications, water saving

Target audience: Preschool – 3 to 5 years

General Goal(s): Focus on energy from water, uses of water and ways to save water.

- Link to tree week – focus on trees, uses and protection.
- Plant an apple tree for Ulla Beag garden.

Specific Objectives:

- Increase awareness of water uses, water as a source of energy through discussion, activities and group work to highlight importance of water conservation.
- Conduct simple experiments to demonstrate water power using a water wheel.
- Measure amount of water collected if tap left on while brushing teeth (2 mins).
- Make a rainwater collection device to bring home and measure rainwater to report back.
- Group work to make wall chart showing uses of water in pictures.

The examples in this lesson are:

Phase 1: Focus on water as a source of energy and a force in nature. Consider its effects and how we use water every day (eg. Electricity, washing, drinking, cooking, boats, plants). Reinforce through simple experiments.

Phase 2: Make a rainwater collection device to bring home. Rainwater to be measured with parents, noted and reported back after one week.

Project 5 Water management Lesson detail

Phase 3: Focus on trees for National Tree Week. Why trees are important, how they use water. Plant an apple tree in the garden.

Required Materials:

- Students' pre-requisite knowledge and skills:
- Use of recycled items.
- Basic understanding of water, its uses and its effects.

Seven-Steps link:

- Curricular Work
- Can inform Environmental Review and Action Plan
- Informing and Involving- Helps younger children understand the Energy Theme and water as a source of energy/power.

Anticipatory Set (Lead-In):

- Children recite their energy code.
- Mini-quiz – 'who am I?'
- Give clues of what 'I' do to elicit water as the common link for all uses mentioned.

Discuss pictures of water being used and why these are important.

Project 5 Water management Lesson detail Step by Step

Part 1:Water wheel experiment

- Focus on water as a source of electricity. Group activity - Toy water wheel and jug of water over basin with toy figures. Allow water to spin the wheel and knock over the toys – identify where the energy came from to make these items move.

- Saving water – Identify ways to save water and why important (turn off taps, rainwater collection etc)
- Measure the amount of water collected if tap let run while brushing teeth.
- Emphasis on avoiding waste.

Activity –

Make a plastic rainwater collection device from recycled plastic bottles to bring home and measure rainwater collected. Report back after 1 week.

Group work to make a wall chart using cut out pictures to show the uses of water.

Part 2: Discuss who needs water outside in nature (ie. Animals, trees, plants)

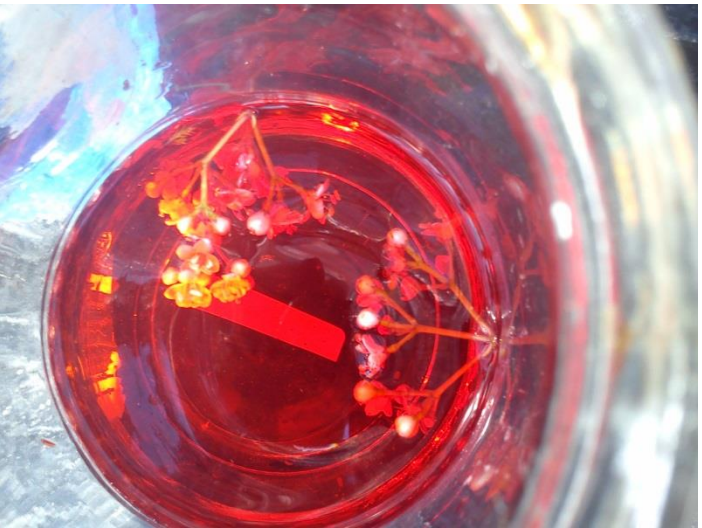
Activities –

- Make bird water dishes and feeders.

- Plant an apple tree to mark National Tree Week.

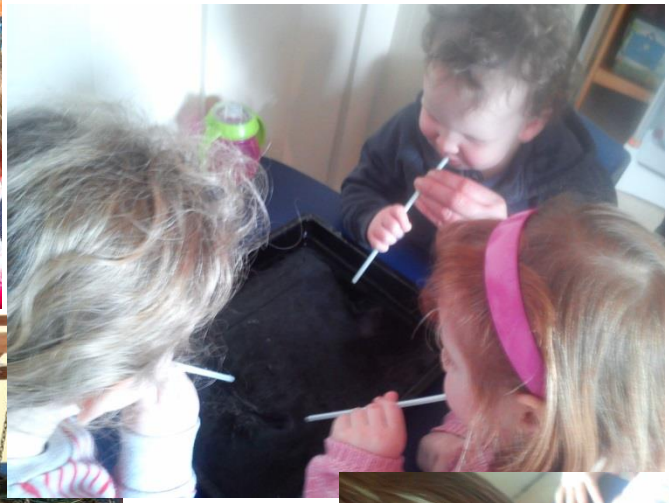
Using recycled jars integrating rain water harvesting with learning about colours

Dying flowers by adding food colour to rain harvested water



Learning about waves and hydropower

Project 5 Water & Wind experiments



Sinking & Floating experimenting with toys

Making a Water picture collage

- Learning why water is important
- How many countries to not have enough water
- How we use water for nutrition and leisure
- How animals need water

Our recycled water harvesters – made by and taken home by the children

Project 6 : Car Pooling & CO2

Detailed already

Project 7: Photos of Recycling school products to generate heat and compost for our potted plants- managed by our pre-schoolers

Ground coffee for heat and pencil toppings
To act as a mulch

Teabag blankets

Using plunger handle ; twistables
Lollipop sticks as supports

Using recycled jars integrating rain water harvesting with learning about colours

Feeding our Lavander plants with coffee grinds

Further projects scheduled: Mar & April 2014

- Project 8 Butterfly Feeder &Bird Feeders and water dishes
- Lesson 9 : Ladybird houses – heat management and recycling
- Project 10 : Herb garden
- Project 11 : Magnetism

Project 12 : Cooking with the Sun

Detailed already

Learning how energy effects food

1. Ice -> Water. Change of shape by the sun.
2. Chocolate-> melts. Change of shape by the sun
3. Water-> heated up by the sun no change of shape but water is still effected by the sun.
4. Marshmallows->Change of shape becomes goo.

1. Using perspex to intensify the effect of the sun.
2. Identifying steamed up areas. From the heat build up.
3. Recycling insulating roll to work as a heat layer

Examining the melted & heated products after sitting in the sun for 3 hours

Afterschool Energy Quiz

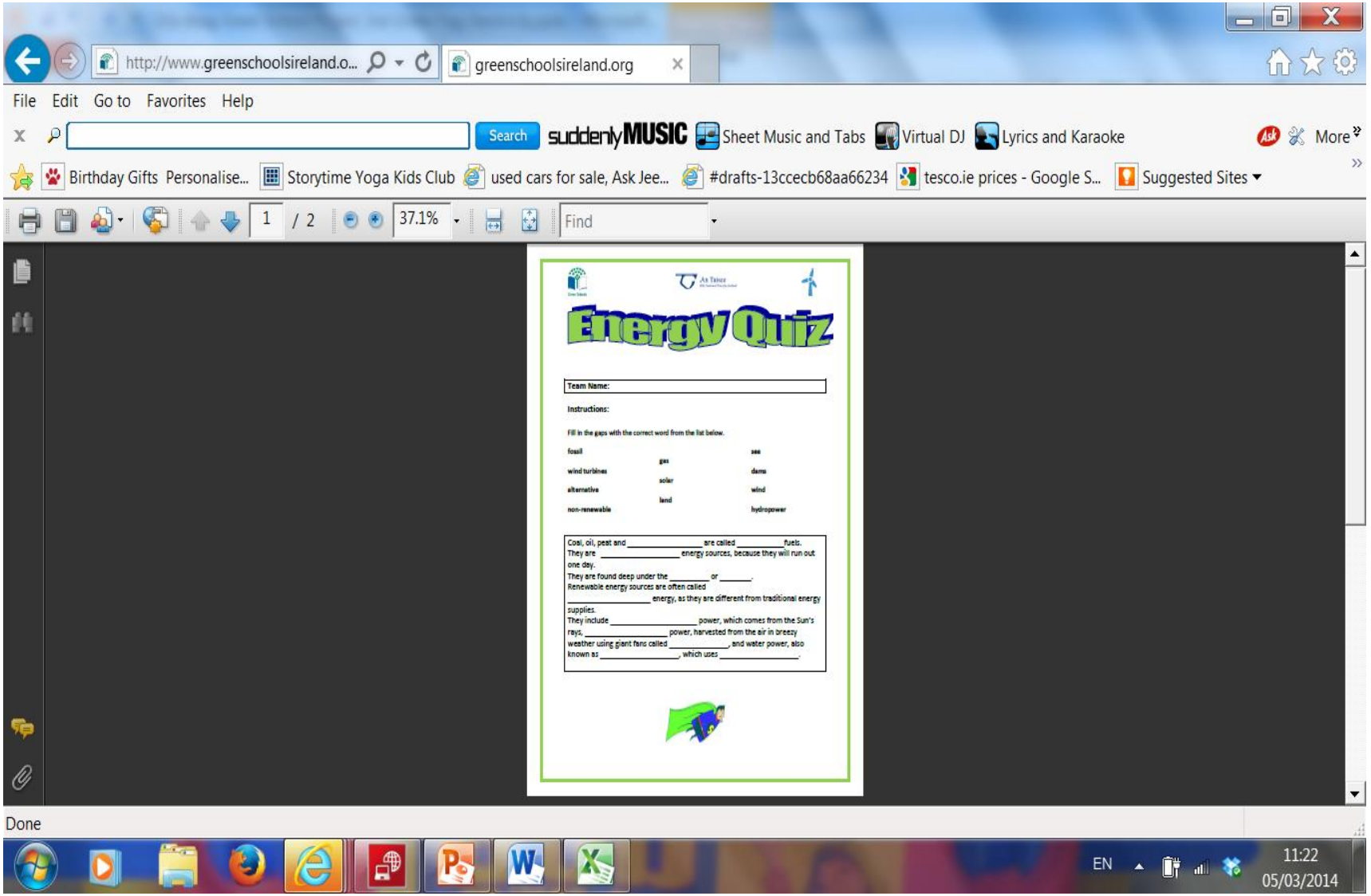
7 after-schoolers 26/1/14 .Average Score 7/11.

They did not know what renewable; hydrotherapy alternatives or dams were.

We followed on explaining all of these and repeated the quiz on 27/2/14 and Average Score 10/11.

30% improvement

Green Schools Ireland energy quiz



What is 1 Khw – Afterschoolers lesson source :An Taisce Green Schools

By becoming energy aware at home and in school, you can save money and help combat climate change. The first step to saving energy is knowing how much you use in the first place.

- **How we measure electricity**

Electricity is measured in units. Each unit is equivalent to **1,000 watts of electricity used for one hour** - or one kilowatt-hour (kWh).

- **What do I get for 1 kWh? 1 kWh in**

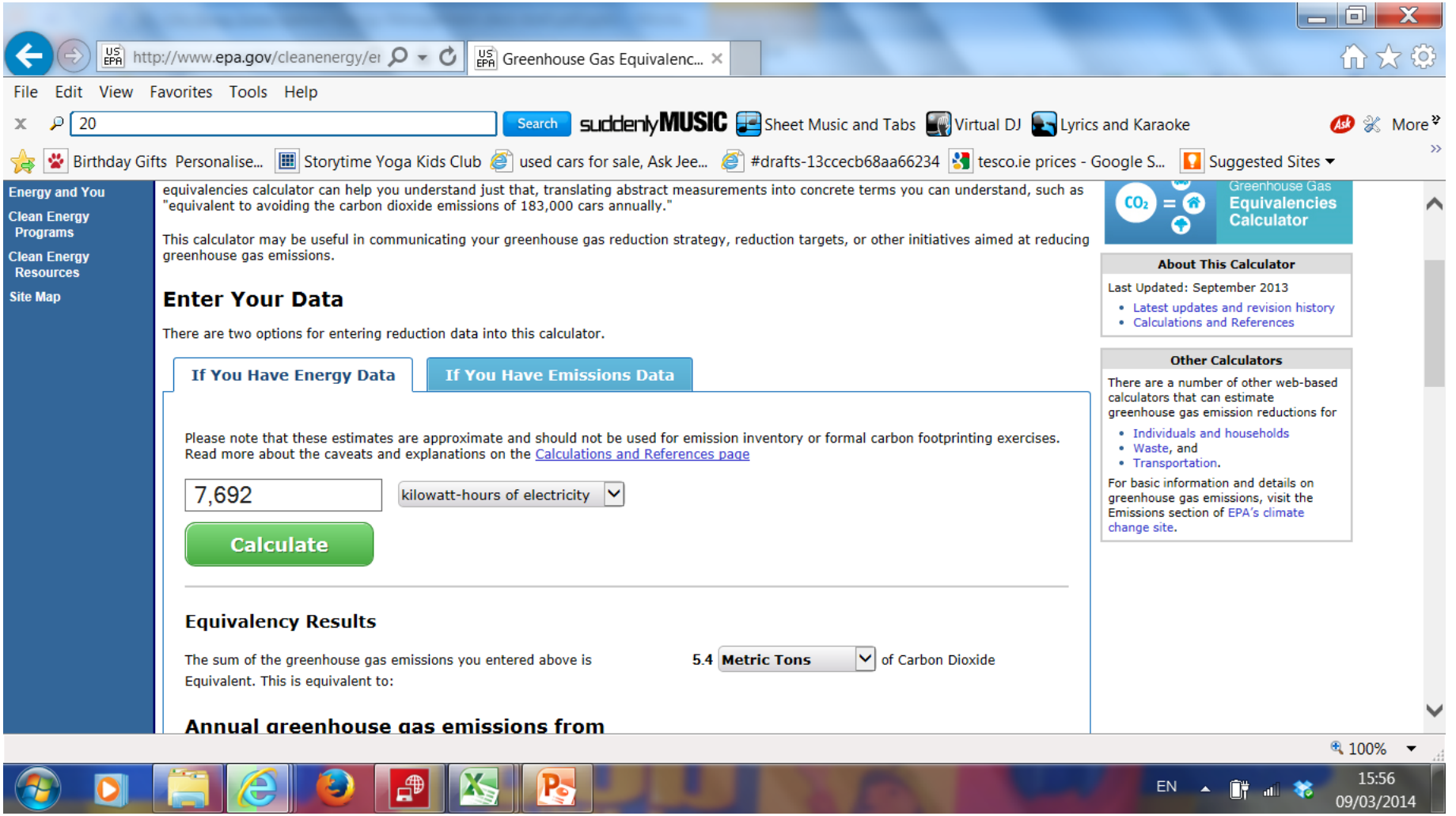
	Lasts for
an instant electric shower	7 to 10 min
an immersion water heater	15 to 20 min
a large ring on an electric cooker	20 to 40 min
a kettle	20 to 40 min
a tumble dryer	20 to 40 min
a two-slice toaster	40 to 60 min
a washing machine	70 to 100 min
a dishwasher	70 to 100 min
a desktop computer & monitor	4 to 6 hours
a 28-inch TV	6 to 9 hours
a 100 watt standard lightbulb	10 hours
a 20 watt CFL lightbulb	50 hours

List of afterschool projects scheduled for Feb ; March & April 2014

- **Project 1** Bean sprouting and potato chitting rolled out with afterschoolers.
- **Project 2 Wormeries –** afterschoolers are involved in the care of the wormeries (watering ; monitoring etc).
- **Project 3 : Seed Saving** Afterschoolers also planted saved Calendula seed for mother's day presents.
- **Project 4 :Wind & Water management** -Build a weather kit – allowing the children to understand temperature readings; acidity in rain through use of litmus paper.
- **Project 5:** Making a Rubbish bag Monster

Rolled out

Converting kWh to CO2 emmissions



Our communication method

- www.ullabeag.ie

- Weekly emailed reports

Detailed back up

Recap on Deliverables from our Litter &Waste management 2010-2012

Direct Savings

• Organic compost	€400 per year
• Purchasing savings	€179.81
• Mr Bin man	€120 per year
Total	**€700**

Cost Avoidance by reusing items/ using natural alternatives.

• Wellies * 10 /12	€100
• Kids seating –used tree trunks	€150
• Fencing – used tree trunks & old stairs railing	€300
• Garden mulch/ ground cover- used chipped wood from our garden	€800
• Raised beds –used tree trunks	€200
• Mypex- recycled	€120
Total	**€1,670**

Reduction in landfill and recycled waste:

• Landfill reduced by	**6240 litres**
• Recycled reduced by	**3210 litres**

Resources

- Energy – SEAI
- An Taisce Lesson plan template
- SESE Curriculum Strand:Energy and Forces – my friend Boo & Buster
- Bibliography
  - 10 Things I can do to help my world — Melanie Walsh
  - Gairdin an Naduir — Martyn Cox
  - The Year Round Organic School Garden — Seedsavers
  - Little book of Science — Usbourne
  - 50 Easter Things to make and do — Usbourne

Master Action plan

Action	Owner	Timeframe	Result	Progress made
Committee Related actions				
Expand Current Green Schools Committee to focus on Energy	Denise Sheridan	Sep-12	Added Elaine McKeogh MSc and all children	Complete
School age childcare Fetac level 5	Denise Sheridan	Aug-13	Completed to ensure that we can deliver a high quality school age childcare program on energy in line with our current aistear focus for early childcare.	Complete
On line informal Siolta program	Denise Sheridan	Oct-13	completed to ensure that we are meeting siolta quality framework in our daily activies and any new project focuses	Complete
Introduce a dedicated energy focus in Úlla Beag for the preschoolers	Denise Sheridan Rhona Sheridan ; Elaine McKeogh	Jan-14	Every Monday is energy review day and Elaine McKeogh attends to drive through the gardening and energy lessons with Rhona	Complete
Complete Environmental review	Denise Sheridan	Oct&Nov 2012	Areas to focus on light & heat management ; food production ' transport to and from the school and revision of curriculum	Complete
Gather information on Heating consumption 2012-2014	Denise Sheridan	Sept 2012-Mar 2014	Bills year on year .	Complete
Clare County council on site visit 25/2/14	Joan ; Denise Sheridan ; Rhona Sheridan ; Preschool kids	Wk 4 Feb	Recommendations - gather energy readings ; research SEAI resources to see what can be included in the curriculum; expand current code to include energy theme and develop a lesson plan on KhW preschool style	Complete
Create summary slide on Litter & Waste management and how we continue to make savings and avoid costs through our continued efforts	Denise Sheridan	Wk 1 Jan 2014	Despite increased children from 9 in 2010 to 20 in 2013 & 2014 we dtill only need a bi weekly refuse collection and have not produced any additional waste despite the growing population - Waste management program 9360 litres of land fill avoided yearlt; welly recycling ; egg production have not bought eggs since 2010 ; fruit & veg production - we are now growing seasonally our fruit and veg requirements ; our recycling program which feeds our arts and crafts has grown to meet our increasing numbers year on year.	Complete
Expand Current Green Schools Code to include specific reference to Energy	Rhona Sheridan	Fri 7th Mar 2014	Begin with the Steps at Home Energy Starts with me By turning off lights and water And being as Green as I can be	
Minute all committee review meetings	Denise Sheridan	Jan 2013 - Mar 2014	separate excel document	Complete
research SEAI resources to see what can be included in the curriculum	Denise Sheridan	Feb wk 4 - Guzzler big book on energy and Guzzler investigates	Guzzler big book on energy and Guzzler investigates energy received and taking children through on Monday 2/3/14	Complete

Master Action plan

Environmental Review Related actions - Creasting baselines and immediate actions required				
Complete a Temperature Survey	Denise Sheridan	Dec-13	Main area 20*C and toilet area 15*c	Complete
Introduce a sustainable car pooling service in line with parents.	Denise Sheridan	Sept 2012; Expanded in Sept 2013	Year on Year benefits reduction in C02 and diesel requirements	Complete
Insulate school and house more to reduce heat consumption - new double glazed windows put in in 2011 ; Side door in school insulated in 2014 and garage insulation will be put in in Mar 2012 (directly underneath the preschool)	Nigel McKenna	2011-2014	Euros saved year on year on oil from bills. • Reduction of oil consumption by 1100 litres through insulation projects ; room temperature management ; ongoing radiator management. 2011 1100 litres = €900 ; 2012 1100 litres = €1050; 2013& 1100 litres = €1200	Complete
Ongoing Classroom heat management	Fiona Bourke & Rhona Sheridan	Jan-14	Reduce main area to 18 *c and increase toilet area from 15*c to 18*c	Complete
Replace all school light bulbs with Green Energy light bulbs	Nigel McKenna	Sep-13	KhW saved year on year	Complete
Garden management - Introduce an annual review of garden plans /mapping in line with Elaine McKeogh Msc in Organic Horticulture to ensure that we are	Denise			

Master Action plan

Curriculum & Education Review Related actions				
Review Current preschool curriculum and develop an energy management curriculum in line with Aistear which can be integrated into the existing green focus on Litter and Waste management	Denise Sheridan	July- Sept 2012	Energy management not present in current curriculum further actions required	Complete
Create master slide linking Aistear to the Green schools program in particular in relation to energy management	Denise	Jan - Mar 2014		final slide to be approved by committee on Fri 7th Mar
Afterschooler energy Quiz - 7 afterschoolers	Darragh; Ruby; Ava; Ruthie ; Clodagh ; Eoin; Max	Wed 26/11/13	Average Score 7/11.	Complete
Develop a list of projects which integrate energy management into our aistear focus; arts& crafts and recycling and litter management	Denise Sheridan & Elaine McKeogh	Dec-13	Master lesson / project sheet	Complete

Master Action plan

Detailed Project plans on Energy Education				
Pre & Afterschoolers project on Food production & Energy - Light; Water heat ; Dark - beans; peas ; potatoes	Rhona Sheridan & Elaine McKeogh & 13 preschool kids	Week 4 Jan 14 - Week 2 Mar	Recycled jars for planted beans; peas and recycled toilet rools used for potatoes - week by week review of impact of dark; heat; light on different food sources. Grown plants will be moved to school garden and taken home. Worm made from recycled toilet rolls.	Complete
Preschooler project on Natures ploughers and end to end microsystems- creating two indoor wormeries	Rhona Sheridan & Elaine McKeogh & 13 preschool kids	Week 1 Feb 14	two indoor womeries created	Complete
Pre & afterschooler project on Seed production- end to end light ; sun; soil; shoots& roots; flowers; seed production ; seed harvesting	Rhona Sheridan & Elaine McKeogh & 13 preschool kids & 5 afterschool kids	Week 2 Feb 14	Understanding of seed cycle and impoact of different energy types at different stages in the lifecycle. Planted harvested calendula seeds for mothers day presents	Complete
Preschoolers project on Wind & Water Energy Management	Rhona Sheridan & Elaine McKeogh & 13 preschool kids	Week 3 Feb14	Created windmills and floating butterflies to understand the impact of wind. Created waves	Complete Complete
Pre & Afterschoolers project on Butterfly & Bird feeders and living organisms effect on energy management	Rhona Sheridan & Elaine McKeogh & 13 preschool kids	Week 3 Mar 14		Complete
Lesson on heat management creating ladybird houses - focus heat management	Rhona Sheridan & Elaine McKeogh & 13 preschool kids	Week 4 Mar 14		Complete
Herb garden management - energy management	Rhona Sheridan & Elaine McKeogh & 13 preschool kids	Week 1 Sept 2013 - current	Link with Litter and Waste management ; transition into home & partnership with parents	Complete
Learning about magnetism	Rhona Sheridan & Elaine McKeogh & 13 preschool kids	Wk 3 Mar 14		Complete
Afterschooler becomes Teacher on creating a rocket blaster	Darragh Hicky	Wk 2 Mar	Darragh- teacher for the day demonstrating how to make a rocket blaster	
Project on Cooking with energy learning about t sun ;light ; heat cold impacts on food and changing state of food	Rhona Sheridan & Elaine McKeogh & 13 preschool kids	Wk 1 Apr		Complete
Afterschooler energy Quiz - 7 afterschoolers	Darragh; Ruby; Ava; Ruthie ; Clodagh ; Eoin; Max	Wed 26/11/13	Average Score 7/11.	Complete
Re do Afterschooler energy Quiz - 8 afterschoolers	Darragh; Ruby; Ava; Ruthie ; Patrick ; Sean ; Clodagh ; Eoin; Max	Thurs 27/2/14	Average Score 10/11. 30% improvement once areas of renewables; alternatives; hydropower and dams were reviewed with all	Complete
Integrate Energy theme to weekly Irish class for preschoolers	Fiona with kids	07/03/2014	Múch an t-uisce agus an solas Dún an doras agus Oiche Mhaith	Complete
Integrating car pooling education with road safety program for preschoolers	Denise Rhona Fiona	Thurs 6/3/14	Using cotton wool collages to explain how Co2 is produced and what our carbon footprint means. Carpooling rhyme : We are Carpoolers; We share our car ;less car trips makes us better by far!"	Complete
Design a preschool lesson to explain khW and measuring energy in every day activities and roll out	Denise	Fri 7th Mar 2014	using blocks ; a3 paper and working with the children to measure daily use of electrical items	

Master Action plan

Integration & Communication with Parents				
Carpooling	as above			
Energy Home survey 1	Denise Sheridan ; Rhona Sheridan ; Fiona Bourke	Week 3 Feb	13 surveys shared - 9 returned. Main finding wasting water when brushing teeth.	Complete
Energy Star Awards	Denise Sheridan ; Rhona Sheridan ; Fiona Bourke	Week 4 Feb	Given out to the children as part of clare county council review on 25/2/14	Complete
Energy Pledge	Preschool children and their families	Week 4 Feb	Pledge to turn off water when brushing teeth ; close doors; turn off lights - all families signed up	Complete
Add a dedicated Web page for Green School Committee to Úlla Beag Website	Denise Sheridan	Thurs 27/2/14		Complete
Sharing Energy Saving tips with parents	Denise with parents	Thurs 27/2/14	Information from An Taisce and SEAI shared with parents on energy svings tips in the home and daily life.	Complete
Days of Action				
Low Energy Week for preschoolers	Rhona & Fiona	Wed 5/3/14	Week review 03-7th march 2014	Mon 3rd & Tuesday 4th meter checked for daily baseline - lights off & low heat from 08.00-15.00 Wed & Thurs.
Energy project day for Afterschoolers	Denise with kids	Mon 10/3 & 12/3	Solar gardens; solar lights; Robot s	
Days of Action				
Low Energy Week for preschoolers	Rhona & Fiona	Wed 5/3/14	Week review 03-7th march 2014	Mon 3rd & Tuesday 4th meter checked for daily baseline - lights off & low heat from 08.00-15.00 Wed & Thurs.
Energy project day for Afterschoolers	Denise with kids	Mon 10/3 & 12/3	Solar gardens; solar lights; Robot s	

Úlla Beag

Our opening hours are as follows:

- 8.00 am to 18.00 pm Mon,Tues &Thursday ; 17.30 pm Wed & Friday for Childminding. 50 wks

- 9.30am -12.30pm Monday – Friday for the Preschool Session. 38 wks
  We are an ECCE/ Free childcare scheme participant.

We also operate Camps or playgroups during the school holidays .

Class size is max of 20 per session.

www.ullabeag.ie