



**CEDEFOP**

European Centre for the Development  
of Vocational Training



Education and Culture DG  
Lifelong Learning Programme

## Study visit group report

Group No	226
Title of the visit	Outdoor science: using the natural world for teaching science
Topic	Learning mathematics and science
City, country	Grange-over-Sands, Cumbria, England, United Kingdom
Type of visit	General education
Dates of visit	17th to 23rd March 2013
Group reporter	Anna Eske Jensen, Carina Brage, Dagmar Isheim

### I FINDINGS

This section summarises the findings of the group while visiting host institutions, discussing issues with the hosts and within the group. You will be reflecting on what you learnt every day. But to put them together and give an overall picture, you need to devote a special session to prepare the final report on the last day of the visit.

In this section, it is important that you describe not only things you learnt about the host country but also what you learnt about the countries represented by group members.

1. One of the objectives of the study visits programme is to exchange examples of good practice among hosts and participants. Cedefop will select well-described projects/programmes/initiatives and disseminate them to former participants and a wider public, including potential partners for future projects. Therefore it is important that you identify and describe all aspects that, in your view, make these projects/programmes/initiatives successful and worth exploring.

Describe each of the good practices you learnt about during the visit (both from the hosts and from one another) indicating the following:

Monday, 18<sup>th</sup> March 2013

Title of the project/programme/initiative	Country	Name of the institution that implements it (if possible, provide a website)	Contact person (if possible) who presented the programme to the group	Whom the project/programme/initiative addresses	What features of the project/programme/initiative make it an example of good practice
Science and Team Work	UK	Castle Head - FSC Castle Head - Field Studies Council  <a href="http://www.field-studies-council.org/centres/castlehead.aspx">http://www.field-studies-council.org/centres/castlehead.aspx</a>	Rachael Passant-Coy	Teachers, Teacher trainers and Students	<ol style="list-style-type: none"> <li>1. Required skills and practices for team building activities.</li> <li>2. Connections between team building and science learning.</li> <li>3. Different methods used for teaching science.</li> <li>4. The importance of the fair test method in teaching/learning science.</li> <li>5. Discussed what skills are required for a good team member.</li> </ol>
Thinking Beyond the Classroom	UK	King's College, London  <a href="http://www.kcl.ac.uk/">www.kcl.ac.uk/</a>	Melissa Glackin (Lecturer, Science Education, Dept. of Education)	Teachers, Students	<ol style="list-style-type: none"> <li>1. Simple examples to deliver science lessons using the outdoors.</li> <li>2. Pedagogical approaches and fundamentals of the teaching process.</li> <li>3. Psychology bases of King's College teaching practices: in the classroom and outdoors.</li> </ol>
Astronomy	UK	Castle Head - FSC Castle Head - Field Studies Council  <a href="http://www.field-studies-council.org/centres/castlehead.aspx">http://www.field-studies-council.org/centres/castlehead.aspx</a>	Steve Day	Teachers, Students	<ol style="list-style-type: none"> <li>1. Creative uses of simple equipment/resources to teach in an inspiring manner.</li> <li>2. Software and web resources for astronomy indoors.</li> <li>3. Versatile activity development, in order to reach a large spectrum of target audiences: from children to adults.</li> </ol>

Tuesday 19<sup>th</sup> March 2013

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Team Building	UK	Castle Head - FSC Castle Head - Field Studies Council  <a href="http://www.field-studies-council.org/centres/castlehead.aspx">http://www.field-studies-council.org/centres/castlehead.aspx</a>	Rachael Passant-Coy	Educators, Students	<ol style="list-style-type: none"> <li>1. Bringing out the science from simple activities.</li> <li>2. How to teach science in order to allow no results or wrong results (including disappointment).</li> </ol>
Science Learning and Teaching in the UK	UK	Castle Head - FSC Castle Head - Field Studies Council  <a href="http://www.field-studies-council.org/centres/castlehead.aspx">http://www.field-studies-council.org/centres/castlehead.aspx</a>	Rachael Passant-Coy	Educators	<ol style="list-style-type: none"> <li>1. The UK educational system and its features.</li> <li>2. Differences between the 4 different kinds of schools in the UK.</li> <li>3. Discussion on the participant's countries educational systems, bringing out the point that politics and education do not and should not mix.</li> </ol>
Science in the Playground	UK	Castle Head - FSC Castle Head - Field Studies Council  <a href="http://www.field-studies-council.org/centres/castlehead.aspx">http://www.field-studies-council.org/centres/castlehead.aspx</a>	Rachael Passant-Coy	Educators	<ol style="list-style-type: none"> <li>1. We were allowed to have a go at the low ropes course, after which we had to find ways to apply science to what we had done.</li> <li>2. Very important focus on teamwork / teambuilding.</li> <li>3. The importance of security and safety before and during the activities.</li> <li>4. Standard planning of science based procedures/activities, focused on Bloom's taxonomy.</li> </ol>
Collecting Data in a Freshwater Stream	UK	Castle Head - FSC Castle Head - Field Studies Council  <a href="http://www.field-studies-council.org/centres/castlehead.aspx">http://www.field-studies-council.org/centres/castlehead.aspx</a>	Rachael Passant-Coy	Students	<ol style="list-style-type: none"> <li>1. An approach to collecting scientific data in a non-biased and standardised way.</li> <li>2. Development and consolidation of freshwater species identification skills.</li> <li>3. Developing complex scientific skills and procedures using</li> </ol>

					simple and cheap equipment tips.
Life Sciences Lab	UK	Castle Head - FSC Castle Head - Field Studies Council  <a href="http://www.field-studies-council.org/centres/castlehead.aspx">http://www.field-studies-council.org/centres/castlehead.aspx</a>	Rachael-Passant-Coy	Educators, Students	<ol style="list-style-type: none"> <li>1. How to link molecular biology techniques to ecological and evolutionary topics.</li> <li>2. Combining field work sampling and complex laboratorial topics, to develop integrated scientific and educational activities.</li> </ol>

Wednesday 20th March 2013

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Visiting St. Bernard's Secondary School	UK	Castle Head - FSC Castle Head - Field Studies Council <a href="http://www.field-studies-council.org/centres/castlehead.aspx">http://www.field-studies-council.org/centres/castlehead.aspx</a> St Bernard's Catholic High School <a href="http://www.st-bernards.cumbria.sch.uk/">http://www.st-bernards.cumbria.sch.uk/</a> STEM Cumbria Ltd <a href="http://www.cumbriastemcentre.co.uk/">http://www.cumbriastemcentre.co.uk/</a>	Richard Dawson (Field Studies Council) Margret Campbell ( St Bernard's Catholic High School) Tony Gill (STEM Cumbria Ltd)	Educators, Students, Teachers, Principals	<ol style="list-style-type: none"> <li>1. Cooperation between local enterprises and schools to enhance the interest in sciences and engineering.</li> <li>2. The Great Britain teaching and school organization system - the practical case of St Bernard's Catholic High School.</li> </ol>
Tour of Castle Head Field Centre	UK	Castle Head - FSC Castle Head - Field Studies Council <a href="http://www.field-studies-council.org/centres/castlehead.aspx">http://www.field-studies-council.org/centres/castlehead.aspx</a>	Paul Bond	Educators, Students, Teachers	<ol style="list-style-type: none"> <li>1. The FSC - Castle Head Centre approach to outdoor education</li> </ol>

Thursday 21<sup>st</sup> March 2013

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Daytime Astronomy	UK	Castle Head - FSC Castle Head - Field Studies Council  <a href="http://www.field-studies-council.org/centres/castlehead.aspx">http://www.field-studies-council.org/centres/castlehead.aspx</a>	Steve Day	Teachers and children	1. Simple approach to daytime astronomy using simple equipment.
Britain's Energy Coast - FSC Castle Head	UK	Castle Head - FSC Castle Head - Field Studies Council  <a href="http://www.field-studies-council.org/centres/castlehead.aspx">http://www.field-studies-council.org/centres/castlehead.aspx</a>	Steve Day	Teachers and children	<ol style="list-style-type: none"> <li>1. Implications and benefits of several energy solutions: discussions regarding the conventional and renewable energy sources ensued.</li> <li>2. Onsite observation of the wind farms and the landscapes in which they are built.</li> <li>3. Outdoor science approach to measurements of wind speed and temperature and their implications.</li> <li>4. Importance of planning to be adequately dressed/equipped for outdoor activities.</li> </ol>
Britain's Energy Coast - REACT Foundation	UK	REACT Engineering Ltd.  <a href="http://www.react-engineering.co.uk/">http://www.react-engineering.co.uk/</a>	Pete Woolaghan	Educators, Students Teachers	<ol style="list-style-type: none"> <li>1. How local companies can be involved in the education and spur on the interest in science.</li> <li>2. How an entrepreneur interest in environmental and educational issues can be used to benefit local schools and the communities.</li> </ol>
Presentations by the participants	All EU Represented Countries	All participants	Anna Jensen Carina Brage Dagmar Isheim Edgar Ribeiro Elaine Bajada Helena Jauho Jelena Likic Jana Špírková Jose Cano Lilita Mactama Martin Rister Myriam Notenbaert Paulo Teixeira	Educators	<ol style="list-style-type: none"> <li>1. Discussions and eye-openers as regards each and every participant's country and its educational system.</li> <li>2. How the different countries work to achieve success in outdoor science and some of their best practices.</li> </ol>

Friday 22<sup>nd</sup> March 2013

Title of the project/programme/initiative	Country	Name of the institution that implements it (if possible, provide a website)	Contact person (if possible) who presented the programme to the group	Whom the project/programme/initiative addresses	What features of the project/programme/initiative make it an example of good practice
Visit to Lindale Primary School	UK	Lindale Primary School <a href="http://www.lindale.cumbria.sch.uk/">http://www.lindale.cumbria.sch.uk/</a>	Sarah Coleman + pupils and staff of the school	Teachers and children	<ol style="list-style-type: none"> <li>1. Demonstration of the Fair Test Method during science lessons.</li> <li>2. A tour of the school was given by the children who showed how they apply science to everyday life at school.</li> </ol>
Visit to Leighton Moss Nature Reserve	UK	RSPB <a href="http://www.rspb.org.uk/reserves/guide/1/leightonmoss/index.aspx">http://www.rspb.org.uk/reserves/guide/1/leightonmoss/index.aspx</a>	Self-guided	General public, school communities	<ol style="list-style-type: none"> <li>1. Comfortable hides for easy bird watching.</li> <li>2. Good examples of well-planned educational material and information for visitor, suitable for all ages.</li> </ol>

2. The study visits programme aims to promote and support policy development and cooperation in lifelong learning. That is why it is important to know what you learnt about such policies and their implementation during your visit. You are invited to describe your findings concerning the following:

**2.1 APPROACHES TAKEN BY PARTICIPATING COUNTRIES (BOTH HOST AND PARTICIPANTS') REGARDING THE THEME OF THE VISIT. ARE THERE ANY SIMILAR APPROACHES/MEASURES IN PARTICIPATING COUNTRIES? WHAT ASPECTS ARE SIMILAR AND WHY? WHAT ASPECTS ARE DIFFERENT AND WHY?**

During the visit, participants were shown the Fair Test Method and how to apply science outdoors. This initiated discussions regarding which countries applied similar techniques and methods, and which did not. Most countries are on the way to being there as regards techniques, whilst all participants carry out outdoor science in biology although not in physics and chemistry.

**2.2 CHALLENGES FACED BY PARTICIPATING COUNTRIES (INCLUDING HOST) IN THEIR EFFORTS TO IMPLEMENT POLICIES RELATED TO THE THEME OF THE VISIT. WHAT ARE THE CHALLENGES? ARE THEY COMMON CHALLENGES? IF SO, WHY? IF NOT, WHY NOT?**

One of the challenges perceived by participating countries was that regarding children with special needs: the ones with impairments or those who are gifted. How can these issues be dealt with in the mainstream curriculum? Learning can take place not only in the classroom, but in other environments such as the outdoors, workplaces, technological schools, companies, and manufacturing establishments. These could possibly cater for a wider range of needs. Some countries keep the children in special classes or schools, whilst others educate these children with special needs in the mainstream classes in order to integrate them, using extra equipment/ resources.

Another common challenge is the fact that all countries have some teachers who do not apply outdoor science. Perhaps all EU countries should adopt policies to include compulsory outdoor science teaching within the curriculum. Teacher education should include proper outdoor training so that teachers would not be scared to face the outdoors, but would be very well prepared and appreciate the value of it. Teachers and pupils should also feel safe and confident to leave the classroom. Teachers are free (curriculum-wise) to choose the locations of outdoor learning.

Not all countries have the same access to the financial benefits that can be tapped. Some countries are better equipped for hands-on activities in science whilst others are not.



**2.3 NAME AND DESCRIBE EFFECTIVE AND INNOVATIVE SOLUTIONS YOU HAVE IDENTIFIED THAT PARTICIPATING COUNTRIES (BOTH HOST AND PARTICIPANTS) APPLY TO ADDRESS THE CHALLENGES MENTIONED IN QUESTION 2.2. PLEASE MENTION SPECIFIC COUNTRY EXAMPLES.**

The English way of handling children with special needs (as we observed it) is that of taking the particular children aside from the rest for some time and coaching them separately.

In Scandinavia, it is only those children with extreme special needs that are separated from the class. All others are taught together and the teachers will have extra resources and help.

In Belgium, Spain and Malta, all children are grouped together, leaving the teacher to fend for each student's individual needs.

In parts of Germany children are split into different ability groups to deal with special needs.

In Sweden, Portugal, Denmark, and Germany universities give courses during the summer holidays to inspire students to study the sciences.

STEM Association, nature schools and various other institutions such as WWF help provide teachers for teaching mainstream and slightly differentiated groups with outdoor inspiration.

**2.4 ASSESSMENT OF THE TRANSFERABILITY OF POLICIES AND PRACTICES. COULD ANY EXAMPLES OF GOOD PRACTICE PRESENTED IN THIS REPORT BE APPLIED AND TRANSFERRED TO OTHER COUNTRIES? IF SO, WHY? IF NOT, WHY NOT?**

Due to the networks and connections that have been constructed, ideas, actions and solutions will be exchanged and applied in the different participating countries. We have all been refreshed and each of us will go away with new ideas and inspirations.

Differences in curricular requirements, legislature and finances could, however, impact on the effectiveness of the applications.

**3. Creating networks of experts, building partnerships for future projects is another important objective of the study visit programme.**

Please state whether and which ideas for future cooperation have evolved during meetings and discussions.

- Establishment of a draft agenda for future group meetings, regarding educational and scientific approaches.
- Transnational exchanges of ideas to outdoor planning of organic garden projects, as an approach to do science in primary schools.

- Students exchange programmes between participant institutions and local schools.
- Teacher training knowledge and skills shared among the participants, with focus on science.

## TO SUM UP

4. What is the most interesting/useful information that the group believes should be communicated to others? To whom, do you think, this information will be of most interest?

The simplicity in outdoor science educational approaches, with great effectiveness and based on basic natural resources and equipment should be enhanced.

How multidisciplinary application of the methodologies, techniques and resources to every pedagogical and scientific field can be applied.

The “Fair Test” concept is important in teaching science.

It is important to organise transnational exchange of knowledge and skills to achieve the fundamental objectives of the European Commission for cultural, educational and social cohesion.

The Study Visit outputs have a broad dissemination potential in every participant’s home country towards educators, scientists, researchers, policy makers and decision makers.

# THANK YOU!