Open Air Laboratories OPAL @QUB

The use of OPAL resources as a tool to promote effective outdoor learning in Science

Dr Karen Kerr, Dr Grettta McCarron,
School of Education, Queen’s University Belfast
3rd July 2015.

Introduction

Open Air Laboratories (OPAL) is a community-focused education and research programme about the environment funded by the Big Lottery Fund and lead by the Centre for Environmental Policy at Imperial College London along with various partners throughout the UK including the School of Education at Queen’s University Belfast. The basic premise of the OPAL project is to engage members of the public of all abilities and backgrounds in outdoor exploration and environmental recording. The aim is to inspire a better understanding and engagement with the places where people live and work. To support this aim 6 nature surveys have been developed by Universities and recording groups on key environmental topics including:

- Air Quality
- Biodiversity
- Bug Hunts
- Soil and Earthworm Surveys
- Tree Health
- Water Quality

Additionally, the OPAL website www.opalexplornature.org provides many other resources to support the survey activities as well as training presentations on key topics.

To support the roll-out of the OPAL programme throughout the UK there are 15 community scientists in place who work with school children and communities to complete the surveys and to provide training to teachers and other survey users.

Since 2007, when the OPAL project began in England over 850,000 people have taken part in OPAL surveys. Over 50,000 completed surveys have been submitted. In Northern Ireland we have already worked with over 500 school pupils and trained 70 teachers and community workers to complete the OPAL surveys.

Research

The aim of this research it to assess the value of OPAL resources for teaching and learning in Science at Key Stage 2 and Key Stage 3. OPAL resources support much of the curricular content in KS3 and Key learning outcomes at KS2.

500 pupils from rural and urban, secondary and grammar schools across Northern Ireland are participating in this research. Prior to participating in an OPAL survey the pupils complete an online questionnaire containing over 30 multiple choice questions and also 10 free form questions to assess the students interest in science and nature, their ability to work alone and as part of a team; their empathy for the natural environment and their connectedness to nature and if they have completed ‘outdoor science’ before.

Whilst completing the OPAL survey they work in a small team of 3 or 4 pupils which requires them to take on different roles as a leader, recorder and worker. They complete the survey with minimal support from the teacher and community scientist, they are given a period of time within which to complete the survey.

Subsequent to the OPAL survey the pupils complete a follow-up online questionnaire to identify which survey they completed, assess what they learned any new science, how they worked as a team and if they developed any new skills. Pupils are also asked about how wellbeing impacted on their well-being and interest in science and empathy for nature. They are also asked about what part of science they like best and if they would like to become a ‘scientist’.

The data will be assessed using SPSS statistical package will inform policy recommendations for enhanced outdoor education in the Northern Ireland Curriculum similar to that which has been incorporated in both the English and Scottish curricula within recent years.

All OPAL surveys are carried out in the school grounds or as close to the school grounds as possible.

Pupils complete OPAL surveys in teams, each individual has a different role to perform. By completing OPAL surveys they learn how to use appropriate equipment; use dichotomous keys to identify species; read and follow instructions; record primary data and develop their knowledge of ecology, biodiversity and plant and animal life cycles. Working within a team they learn about their own skills and strengths.

Contact details

For further information on each project please contact:

Science Teaching for Transition in the Outdoor Classroom;
Dr Karen Kerr. Phone: 028 9097 5945. Email: k.kerr@qub.ac.uk

OPAL Training and Outreach Officer;
Dr Grettta McCarron. Phone: 028 9097 1496. Email: g.mccarron@qub.ac.uk

Preliminary results: How useful are OPAL surveys?

Preliminary results are presented based on the findings of 50 pupils (23 boys and 27 girls) between 11 and 14 years. They are from secondary and grammar schools within rural and urban environments.

The project also wishes to assess students interest in science and connectedness to nature. The results so far show that students are very interested in science and enjoy science lessons particularly experiments and ‘outdoor science’. However, when asked if they would like to become a ‘scientist’ very few students said they would. This would imply that although pupils enjoy science they do not see it as an attractive career choice.

Would you like to be a scientist?

Nearly half of pupils strongly disagreed that they would like to be a scientist in the future. About 40% were unsure and less than 10% of students said they would like to be a scientist in the future. No students strongly agreed that they would like to be a scientist in the future.

Further questions:

Is there a disconnect between students enjoyment of science at Key Stages 2 and 3 and their choice of subjects for GCSE and A level?

Preliminary research results and policy recommendations

To date there the OPAL resources have been greeted with great enthusiasm by students and teachers alike. However, teachers are reluctant to use the resources without prior training. OPAL do provide training and support for teachers to complete the surveys and the team have already trained 40 teachers with a further 60 booked for training in September and October this year.

As the resources are free to access on the OPAL website it is very important that teachers are aware of their potential for inclusion in their curriculum teaching. Every teacher we have worked with so far has included the resources as part of their scheme of work for coming years.

The training has also brought other benefits to teachers as it has provided networking opportunities for local groups of teachers who share knowledge of the best sites for local exploration and survey completion.

The highlights of the project so far include:

- Five primary schools and five post-primary schools (lower Key Stage 3) have participated in the project research
- 250 pupils have already completed the online questionnaires and OPAL surveys.
- Recruitment of schools to the research is ongoing and we aim to have a further 5 schools involved over the next year with a total of over 500 pupils participating in the research.
- Dr Kerr gave evidence to the Education Committee at Stormont Belfast (Local Gov) in relation to the need for outdoor learning for all, based on the evidence from this and other research.