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ENVIRONMENTAL EDUCATION AT TOWNELEY HALL ART GALLERY AND MUSEUMS, BURNLEY

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Introduction

Awareness of the consequences of man's impact on the environment has radically increased in the last decade, and there is evidence to show that children exhibit the greatest environmental concern. Their knowledge of global issues such as the destruction of the tropical rain forests, global warming and pollution of the oceans is usually fairly extensive. However, they may well be unaware of problems in their own local environment. Therefore it is essential that education policies ensure that all children receive a sound environmental education.

The introduction of the National Curriculum has helped to formulate a consistent approach to link the environment with all subjects in cross curricular activities. In fact in 1989 HM Inspectorate of the Department of Education and Science produced a booklet entitled '*Environmental Education from 5 to 16 Curriculum Matters*'. This document formally recognised environmental education as one of the cross curricular themes within the National Curriculum.

In response the National Curriculum Council published Curriculum Guidance Document 7 the following year. This document attempts to define a framework for environmental education and provide assistance to implement cross curricular themes and activities. Several interesting and important points were covered (this summarises the approach we have adopted at Towneley Hall Natural History Centre):

The long-term aims of environmental education are to improve management of the environment and promote satisfactory solutions to environmental issues.

Environmental education aims to:

* *Provide opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment.*
* *Encourage pupils to examine and interpret the environment from a variety of perspectives – physical, geographical, biological, sociological, economic, political, technological, historical, aesthetic, ethical and spiritual.*
* *Arouse pupils' awareness and curiosity about the environment and encourage active participation in resolving environmental problems.*

Teachers are usually extremely resourceful people; however, in the present economic climate, with resources dwindling and core subjects demanding the greatest financial input, it is vital that museums play a supportive role and hopefully provide facilities for schools to help with environmental education.

The staff at Towneley Hall believes that environmental education is important. Burnley Borough Council have invested and are prepared to continue investing in a variety of resources to help schools and to ensure that every child is given the opportunity to learn about wildlife and the environment first hand through direct experience.

However, this has not been achieved overnight and the rest of this paper will deal with the development of the Natural History Centre and its role in environmental education in Burnley.

The Development of the Natural History Centre

The Natural History Centre was erected in Towneley Park on the site of the two old greenhouses in the old walled garden. The greenhouses were used by the parks department to exhibit various plants and animals on a very informal basis to the general public. The new building was financed from the proceeds of a municipal lottery at a cost of £35,573 and was officially handed over to the local authority at the end of February 1981.

The original concept of the Natural History Centre was to provide an education facility for schools, colleges and the local community. In June 1986 a decision was made to upgrade the aquarium within the confines of the Zoo Licensing Act 1981 and improve the educational potential of the whole centre.

It was also decided to make the exhibits relevant to the local area by displaying fauna and flora found in and around Lancashire. In order to display as many diverse organisms as possible and demonstrate relationships between these organisms it was decided that the display should contain seven ecosystems...

(i) Stream
(ii) Canal
(iii) Predator Tank
(iv) Lake
(v) Estuary and River
(vi) Tidal Rock Pool
(vii) Sub-Littoral Area of a Rocky Sea Shore

It was felt that within these biological niches it would be possible to show how physical and biotic factors influence the relationships between various organisers and the effect of the organisms on their environment. The aim was to demonstrate aspects of ecology such as competition, dependence and interdependence food chains and food webs.

The Educational Role of the Aquarium

The original concept of the aquarium was to provide a series of displays showing the variety of freshwater fish and invertebrates found in and around the Burnley area, and marine animals found around the coastline of Lancashire. To date we have exhibited a wide diversity of water life with associated behavioral mechanisms, e.g. schooling in salmonoids and symbiosis between shrimps and sea anemones. Feeding patterns have been used to illustrate food chains and food webs to many children during practical sessions. The 'Catch' from a day's pond dipping is usually transferred to a suitable aquarium for closer detailed examination. This has enabled the staff at the Natural History Centre to interpret many aspects and objectives of the National Curriculum, and encourage and develop an interest and appreciation of all forms of life. Live displays are dynamic and provide an excellent vehicle for promoting an attitude of curiosity and scientific enquiry, and are extremely useful in experimental and investigative work in the study of biology. In the Pond Life Package simple experiments have been set up to help children make and record accurate observations, and to analyze, interpret and draw conclusions from the data and other biological information.

The live exhibits at the Natural History Centre have a very important role in education, and can stimulate children to realise the importance of wide range of conservation problems, as well as providing an insight into aspects of biology which are not normally seen in the classroom.

In order to realise the full educational potential of living displays the design and maintenance has to be of very high standard, with careful consideration given to inherent problems in running a closed system.

Environmental Education in the Galleries, Classroom and Park

"There is a groundswell among young people of concern for the natural world. This is the foundation on which we can build a wider understanding of the issues. It is important that we capture this enthusiasm and that no opportunity is lost to develop knowledge, understanding and concern for the environment through school education".

Angela Rumbold, MP, former Minister of State of Education and Science

Helping children adopt a positive approach to the environment should be central to environmental education. Promoting positive attitudes to the environment is essential if children are to value it and understand their role in safeguarding it for the future.

Encouraging the development of attitudes and personal qualities such as...

* *appreciation of and the care and concern for the environment and for other living things*
* *a respect for the beliefs and the opinions of others*
* *a respect for evidence and rational argument*
* *tolerance and open-mindedness*

(Curriculum Guidance 7 *Environmental Education* National Curriculum Council) will contribute to this process.

We are extremely fortunate at Towneley Hall to be situated in about 300 hectares of mixed woodland, moorland and recreational areas such as golf courses and playing fields, with access to the South Pennines. The grade one quality River Calder flows through Towneley Park, and there are also several streams; other aquatic features include two major areas of standing water (the ornamental pond in front of the main hall, and the Deer Pond). There is a fenced off area of woodland which is managed as a nature reserve specifically for birds, with hides and access for wheelchair users.

The Natural History Centre stands at the junction of two nature trails, and consists of a classroom, two exhibition areas, and an aquarium. It is permanently staffed by a Natural History Technician who maintains the aquarium and is very much involved in the environmental education role of the Centre.

Several educational workpacks have been developed, including:
Discovering Insects
Mammals, their Tracks, Trails and Signs
Life in Ponds and Rivers
Measuring and Identifying Trees
Discovering Birds

Each package consists of worksheets, information sheets, instructions for teachers, preparatory work assignments, and information for future projects. All equipment and materials for use during the teaching sessions are provided by the Natural History Centre.

Two additional workpacks are currently being developed, for Weather and for Geology

The Weather Package will be aimed at Key Stages 2 and 3 in Science in the National Curriculum and will be contributory to Attainment Targets 1-4. There will be a considerable practical input from the children to develop the following aims

* *Understanding key concepts*
* *Using scientific methods of investigation*
* *Appreciating the contribution science makes to society*
* *Understanding that learning in science contributes to personal development*

Several sets of weather measuring equipment have been purchased for hire by schools. This equipment includes rain gauges, thermometers, barometers, hygrometers and anemometers. Full instructions are provided with suggested projects, charts and information on subjects such as clouds, storms and seasonal variations.

Additional equipment has been installed at the Natural History Centre, including a satellite dish and personal computer which receives transmissions from geostationary satellites orbiting 36,000 km above the earth. This allows children to predict the weather and produce weather maps; infra-red images can also predict temperature gain and loss on the land and sea.

We are also hoping to install equipment to process LANDSAT DATA produced by very high resolution satellites, which can show extremely detailed land features. The resolution obtained from LANDSAT can be as close as 10 metres, and features such as crop types, urbanised areas, pollution in waterways, and even buildings and individual streets can be seen.

It would be possible to provide cross curricular themes with the Weather Package and the very nature of this and all the other packages supplied by the Natural History Centre provide a practical 'hands on' experience. The practical activities offered by the Centre are grouped into four basic types

basic skills, e.g. pond dipping, using a microscope, measuring trees with a clinometer, preparing an insect key, use of wind gauges, barometers, etc.

observations, e.g. involves sorting and classification with the use of keys, examining different fossils and rock types, work on tree species looking at similarities and differences.

illustrations, e.g. descriptions of insects for keys, cloud types and formations, dissections of owl pellets for small mammal surveys.

investigations, e.g. small mammal surveys, insect surveys during 'mini-beast safaris', fauna and flora recording schemes, growth of plants, ecological surveys.

The Natural History Centre offers half and full day sessions, and we hope by the end of each session that each child has gained a little knowledge or understanding of some of the concepts we have explored during our investigations, but more importantly have developed their curiosity and imagination by questioning and trying to explain things.

The Future (Where do we go from here?)

We have a fairly well developed service with about 140 schools per annum visiting the Centre from as far afield as Carlisle in the north and Nottingham in the south. We have had to introduce a charge of £25.00 per visit which to date has not had too much effect on bookings. However, the staff at the Centre feel we need to take stock of the work we do and reassess some of our methods. We have monitored the service both in a quantitative and qualitative way for several years and, in the light of the current economic climate and with another local authority reorganisation looming over the horizon, a change in the way we operate may well be necessary.

When the Centre was set up in the early 1980's we were the only agency operating in this field in Burnley Borough Council. Since the 'Green Revolution' many other organisations, such as Lancashire Wildlife Trust, BCTV, Groundwork, and the local authority's Environmental Services, offer some sort of environmental education, so there is an element of competition. However, several working groups and partnerships have been formed to tackle projects like Burnley Borough Council's Environmental Strategy, and the Wildlife Strategy. It is the policy of the staff at the Natural History Centre to be involved at 'grass roots level', consequently we take part in all aspects of committee partnerships and working groups, e.g. we are actively involved in the Wildlife Advisory Group, on the council of the local Wildlife Trust, and on the working groups for formulating a range of strategies. So all the groups concerned with environmental education meet on a regular basis, work in harmony, and hopefully eliminate duplication. This harmonisation of working methods and the exchange of ideas has helped tremendously to modify some of our teaching methods and provide practical suggestions and savings by highlighting some of the errors which have been made.

For instance many of the schools which visit the Centre are limited in the amount of time they can spend, e.g. they usually arrive at 10.00 a.m. and leave at 3.00 p.m. with about 1 hour for lunch. Ostensibly they are with us for approximately four hours. Many of the practical projects require an element of instruction, although we do impress on teachers when we send out the workpacks that we assume some knowledge and key words. Therefore, for example, if we have to train children in the use of a microscope we have lost valuable teaching time, and not everyone will reach the same standard. To overcome this problem we use a projection unit with a live box so everyone will see the same image. In many instances we find that time spent outdoors on fieldwork is a better investment, e.g. a 'mini-beast safari', or a pond dipping session, with follow up work back at school.

The museum's natural history collections are used to some extent in a didactic display, or for tactile sessions with younger children, but on the whole most of the more common specimens, such as small passerine birds and some of the common mammals such as grey squirrels, are easily seen in the woods around the Centre. The Centre has a slide library of over 1,200 transparencies arranged in specific lectures. At one time these lectures were offered on a regular basis, but after monitoring the response, especially in some age groups, a conscious decision was taken to withdraw this service. The same is true for video tapes. Again there are a large number available, but in the short time we have to work with school

groups, forty minutes watching a film on pond life does not compare with spending forty minutes around the pond with a net. We still make use of these visual aids, but only in special circumstances. We have tried to learn by our mistakes and the learning curve is still climbing. The 'Kiss Principle' is a method we have tried to follow especially with young children. If you sneak up on them and introduce some scientific concepts and ideas, with an element of fun, when they are not looking they seem to retain some of the knowledge. An example of this can be seen during the 'mini-beast' safaris.

Originally we supplied every child with either a sweep net or pooter – chaos reigned with little success. The simple concept we were trying to get across was the diversity of organisms. However, we didn't achieve this. Gradually another method evolved where we gave every child a plastic specimen bottle with the instructions to use their eyes and collect different types of invertebrates. At this stage very little information on individual species was provided. At the end of the field trip the children construct their own key using various physical characteristics. To date this has been very successful, with many repeat visits for follow up work. It also relieves pressure on the ponds, which are booked solid from May to September.

Building up a Network and Maintaining Links

Initially the Natural History Centre operated in isolation. However, it was soon apparent that we could offer a more effective service by building up links and liaising with departments within Burnley Borough Council and with schools and community groups.

We have organised INSET Days for teachers, and we have built up links with teacher training colleges. We are also in the process of organising small working groups of enthusiastic local teachers for educational projects, and to provide a forum for discussion and feedback. We wanted to encourage different teachers, different sections of the planning department, and different voluntary organisations, to make contact, thereby creating an awareness of the opportunities that are around in the environmental field. Another function of these 'cluster groups' of teachers is to pool resources and gain access to a variety of grant funding bodies.

Access to grant aid and maintaining a high profile within the environmental education field is fundamental. Several organisations are based in the Centre. The Young Ornithologists' Club, which is the junior branch of the Royal Society for the Protection of Birds, meets regularly in the Centre; in fact, the staff are actually involved. Since the YOC was formed in 1990 we have raised over £5,000 in grants from a variety of sources including English Nature, Shell UK, and the Urban Programme, to purchase textbooks, binoculars, telescopes, recording equipment, and for environmental projects. These projects include habitat creation, tree planting, creating ponds, etc. The RSPB, which is the parent organisation, also believes it is essential that educational policies ensure that all young people receive a sound environmental education. The RSPB is also very active in producing resources and providing educationalists with training. For instance, they distribute free of charge a newsletter to every school in the country. They have also produced a twenty four page document called the 'Vital Link' which focuses on environmental education.

Practical Environmental Education

There are a number of activities which the Natural History Centre uses to provide a practical hands on experience to create a better environment. These include:

- tree planting or raising trees from seeds
- provide bird feeding stations to attract and examine bird life
- flower planting
- creation of wildlife gardens
- making bat and bird boxes
- creating ponds
- clearing ditches
- litter drives and recycling bins for aluminium cans and newspaper

A lot of these activities have reduced vandalism and imparted a sense of ownership. Towneley Park, which is to the south east of the town centre, is on the urban fringe. Consequently, public pressure of over 1,000,000 visitors per annum does lead to incidents of mindless destruction. Children who take part in habitat creation and practical environmental education feel a sense of ownership and involvement.

Summary

We are in a fairly unique situation with a purpose built educational facility with a simple 'mission statement':

To interpret the fauna and flora of Burnley and the surrounding area for the educational benefit of the local community.

We have the back up and support of a museum service with substantial natural science collections, and a very sympathetic and supportive curator. The challenge in education and planning is to ensure we win the 'hearts and minds' of local people especially children, who fortunately are now more environmentally conscious than ever before, and schools are going to demand more environmental education.

So, to summarise, we must be positive. We should recognise what is already happening in schools, encourage good practice, spread the new around, and promote environmental education as a cross curricular activity which can be fun and stimulating.

Reading List

Royal Society for the Protection of Birds (1991) *Environmental Education on Integrated Approach,* Proceedings of a One Day Conference held in Manchester on 28 November 1991.

National Curriculum Council (1990) *Curriculum Guidance 7: Environmental Education.*

National Curriculum Council (1989) *Curriculum Guidance 3: The Whole Curriculum.*

DESIGNING ACTIVITY SHEETS FOR NATURAL HISTORY COLLECTIONS

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The Education team at The Natural History Museum in London use activity sheets to help visitors interpret the Museum's natural history and geological exhibitions. In this article you can find out exactly what we mean by 'an activity sheet', why we use activity sheets as a means of communication, how we structure the sheets and how we develop new sheets.

What are our activity sheets?

Our activity sheets are booklets of words and pictures, from 4 to 8 pages long and either A4 or A5 in format. The words are written to direct users to make close observations of particular specimens or displays. The pictures may guide them to find certain objects, or help to focus their observations.

Each activity sheet covers a sequence of 'teaching points' – specified objectives that we wish to communicate. The teaching points are linked to make a 'storyline'. Each activity asks the sheet's user to make some observations. Then, the user has to process (think about) the observation. The user also has space on the sheet to record what they have found out.

Why do we use activity sheets?

The Natural History Museum in London has a wide range of exhibitions covering many aspects of life and earth sciences. Themes as diverse as gemstones, dinosaurs, marine conservation and British woodland are explored. Yet all the exhibitions have something in common; they have been designed for the Museum's typical visitor, a 'committed learner' with an adult reading age and an adult understanding of concepts.

Clearly, many visitors do not fit this description, in particular the 200,000 children who visit the Museum each year in organized school groups. Almost 90% of these students do not have an adult reading age. The children benefit from support in interpreting the