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The Educational Role of Live Exhibits - Short reports from Seminar held at Townley Hall, 25 October, 1991

Introduction

There were seven talks given at this Seminar. Written versions of three of these talks, submitted by the speakers, are printed here; three other talks are being published as separate papers (see below).

What do schools want?

by Peter Garner, Educational Advisor in Biology, Lancashire County Council Education Department.

One of the main 'buzz' words at the moment is 'National Curriculum'. The National Curriculum consists of three 'core' subjects plus six 'foundation' subjects plus religious education. In addition schools have to take account of cross curricular dimensions, skills and themes. One of the themes is 'Environmental Education' which in the context of 'The Educational Role of Live Exhibits' is the most important. There is also an important role for teachers of core and foundation subjects in this context. It is obvious that in science and geography there will be opportunities to use live collections to advantage. But in English, art, technology, history at least a case can be made to enrich the curriculum by introducing children to live exhibits in relation to these subjects. In the case of science there are direct references to living things and the importance of appropriate care. In the theme of environmental education there is reference to discussion of issues of concern.

But the National Curriculum is not the school's curriculum. There are many other important facets to a child's education and what happens outside the National Curriculum is of equal importance to what happens inside it. It has always been important to take children out of school to show them the wider world. A visit to a zoo or other live animal collection is on the agenda for the vast majority of schools when planning their visits each year.

Throughout a child's education there are certain things which are highlights and visits out of school are of particular importance especially in the primary school. It is important to get away from the classroom to see the wider world and equally important to use this as a stimulus to enrich the curriculum which the children receive. This makes the classroom a much more exciting place as well as making lessons more relevant. Even without a National Curriculum these activities would go on in our schools because they are good for education.

At secondary level there seems to be more reluctance to get out of schools to see live exhibits. However field studies are regarded as important and perhaps there are opportunities through this approach to generate more interest in live collections.

I want to consider these issues at three different levels - (i) live exhibits (ii) the school estate (iii) the school and especially the classroom.

Live Exhibits

Animal exhibits include -

- Zoos - with their rich collections of exotic creatures.
- Safari Parks - offer the chance to see animals in wide open spaces.
- Farms - collections of domesticated animal species for economic reasons - links here with the theme 'Economic and Industrial Understanding'.
- Live bird collections - the Wildfowl and Wetlands Trust and the R.S.P.B. provide opportunities to see a vast variety of birds in a controlled collection or to see the naturally wild birds.
- Aquaria - fresh water and marine collections now offer a further choice for schools.

I do not think it matters particularly where children go but it is essential that when they visit these places there is a well prepared education programme with good educational materials of high quality for the teachers and the children. I also think that it is important for the children to see the animals and, if possible, to have an expert available who can explain things to them. Nowadays there are many interactive systems available which can simulate and even replace the real thing. But it seems to me that when children are taken to an exhibition of living things they should spend most of their visit looking at the real thing. There are plenty of ideas to develop - classification, movement, feeding habits, design of body, feet and beaks and of course all the issues concerned with conservation. There is also the uniqueness of the animals in the collections which can make an enormous impact on young children particularly. Remember the first time you saw a giraffe or an elephant or eagle? It can be equally exciting to see fish or other water creatures.

Nowadays children are much more aware of issues concerned with animal care and welfare and those who are responsible for collections need to be aware of this because if not they will be put on the spot by today's children. The exhibits should be well labelled and the labels should be informative for the children and their teachers and not just for the 'expert'. Work materials are vital and follow up ideas are more than welcome. Indeed I think that ideas must be included for the teachers to use when they return to school and they must relate to the National Curriculum because this takes up most of the curriculum time available. Children should be given the opportunity to visit on more than one occasion so that their knowledge and understanding can be

further enhanced. This of course is in the hands of the teachers but you can help by providing support materials and perhaps you can give the teachers ideas which would encourage them to return. A problem for schools these days is the cost of getting to a venue and with the current legislation regarding charging things are even more difficult for some schools. For this reason it is essential that the visit is worthwhile.

Plant exhibits - I have referred to animal collections up to now but I think that plant collections can stimulate plenty of interest and ideas for follow up work. I do not think that many schools visit plant collections certainly if compared to visits to animal collections. The other advantage in terms of linking the visit with work back at school is that it is much easier to keep plants for study and so direct links can be made and studies can be related to the visit. I think that field studies are very important in this context. Children should be taught to observe the environment including the plants. Most people on country walks miss so much because they have not been taught to look properly. It has to be taught in the first place and it begins at school and this can be reinforced when pupils visit a live collection.

The School Estate -

Each school should have an estate which is an exciting and stimulating place for children to be. The needs of primary and secondary schools will be different but certain elements are common to both -

There should be a 'wild' area which is planted up and provides a woodland habitat plus a wildflower meadow. Hedgerows can be planted around the estate and can be used to provide demarcation between areas of interest.

There should be a pond, if the school wants one, which will provide a focus of interest as well as a wonderful resource for lessons in all sorts of areas of the curriculum.

In a primary school an adventure playground is a worthwhile addition as well as places to hide in.

There might be a garden area and the design of this may vary but there are lots of exciting ideas for making this area of the estate interesting.

Maybe a greenhouse will provide an additional resource which will extend the possibilities for growing more exotic plants. This is only viable if there is a teacher who is prepared to take on the responsibility for organising things.

With this come the animals so that with effort 'God's Half Acre' can be created for the benefit of all the children.

I have seen some pretty boring school estates but also some which have become a part of the learning environment for the school. It has meant commitment from the headteacher and at least some of the staff but it is worth the effort. The governors and parents should also be involved.

Inside the School -

It is important that the school itself is not neglected. Schools vary but primary schools are exciting places to be and secondary schools are nowadays catching up. There are many opportunities to make the school an attractive and interesting place. This leads to respect for the fabric and enlivens what happens there. There are opportunities to keep animals as long as correct housing is available and as long as those involved plan carefully and know how to care for animals. Perhaps a starting point should be an aquarium which is easier to look after and provides a rich source of interest and ideas. You could even have a pond in the corner of the room and the aquarium could contain the same creatures as the pond so that children can see what is happening under the water.

Plants can be used in a variety of ways and used to study the conditions required for growth and maturation. They will also bring the animals associated with them sometimes useful but sometimes pests. It is all education and related to their future lives when many of them will develop interests based upon their school days.

Hatching chicks is a very exciting thing for young children and brings the animals to them. It is a vehicle for teaching about the care of living things, but requires a lot of organisation.

Keeping insects is another activity which can be carried out without too much difficulty and there are plenty of insects which can be kept successfully in classrooms.

I think that those who run zoos and other collections have a responsibility to help schools who wish to keep animals because that is where the expertise lies. You might take the lead in this by providing ideas and support for teachers.

Summary

Children should have the opportunity to visit live collections. They will learn from what they see but will benefit particularly from the expertise of the staff and the educational materials produced.

Live collections should include plants as well as animals and the education provided should demonstrate to children how the two are related.

School estates should be developed so that they are exciting and educationally interesting places. If they are then the collections of plants and animals will become an important stimulus and resource for learning.

Classrooms should also be exciting and interesting places which stimulate and enhance learning.

I think that this is what schools require and one can make a very important contribution by making visits something to remember but also by helping the teachers to develop the environment back at their schools.

[An updated and extended version of Mike Graham's talk will appear in the next issue of the *Journal*]

Of Shoals and Schools - Aquaria and the National Curriculum

by Ian Wallace and Denis Murphy, Liverpool Museum, William Brown St., L3 8EN

The talk at the meeting was to be given by Denis Murphy, Curator of the Aquarium and Vivarium for the National Museums and Galleries on Merseyside. Unfortunately, Denis fell ill shortly before the meeting and an alternative talk was given by his colleague, Ian Wallace, Curator of Zoology. This written account draws upon the talk and the notes Denis had prepared.

The present aquarium and vivarium at Liverpool Museum was opened to the public in March 1966, and has remained one of, if not the, most popular galleries in the building. The only documented time its continuance was threatened was in 1984. Following local government re-organisation and the conversion of Merseyside County Museums to the National Museums and Galleries on Merseyside, there was a staff review when all functions of the new organisation were scrutinised by an outside government team. It was suggested that the aquarium was not a core function, those being concerned with the maintenance and exploitation of collections of traditional 'dead' objects. It is indeed true to say that aquaria and vivaria are outside of the main core activities of many museums but the suggestion was rejected, and it was not just because it would have been plain stupid to remove one of the main reasons people visited the place, but also because of the educational role of the set-up.

Whilst the educational role of the aquarium was indisputable, it was also somewhat ill-defined. As with most museum displays, there was a hope that teachers would use its facilities to inspire their pupils or illustrate particular elements of their courses or projects. Most pupil visitors were young children whose courses were then not as closely defined as those of older exam takers. Then along came the National Curriculum with its specific attainment targets and set subjects.

With a little imagination aquaria can be used to demonstrate a wide range of curriculum topics, and because of the live element they are probably more attractive to teachers than other parts of museum natural history. The following lists suggests some topics which could be offered in the Science for Ages 5 - 16 area.

The Diversity of Life - why creatures are different shapes, colours and sizes.

Lets Get Moving - animals in action, buoyancy and swimming, shoaling and flying, jumping and shooting, squirming and burrowing.

Making Babies - sexual and asexual reproduction, breeding cycles and seasonal changes, courtship, territoriality and aggression. Egg laying, live bearing. Brood care, nest building.

Strange Partners - animal relationships, how and why animals and plants sometimes live closely together. Symbiosis, commensalism.

Eat or be Eaten - food and feeding mechanisms. Digestion, assimilation, excretion. Food chains. Predator - prey relationships. Growth, how old is that fish?

Homes and Habitats - local or exotic environments and how they differ. How and why we change our aquarium habitats. How creatures adapt to different environments.

Lets Clean Up - pollution and its effect. Our duty of care, how our actions affect the environment. What happens in a fish tank when things go wrong?

Check It Out - water, our most vital resource. Simple experiments showing how and why we monitor and change water quality, temperature, p.H., density. Use of simple metering and monitoring equipment to demonstrate water flow, currents, erosion, turbidity, oxygen levels, acidity, alkalinity, salinity etc.

Who's Who? - identification of creatures into simple groups through observing important features and using simple keys.

If available, demonstrators could illustrate some of the above topics using current aquarium displays. However, all of these topics and much more could be taught by combining displays with a suitably equipped and staffed teaching room or 'Living Laboratory' which would enable us to concentrate upon the huge potential of living specimens available in aquaria. The traditional public aquarium has rows of tanks with little space for labels, and once a few people are around a tank, others cannot always see what point is being illustrated. To a lesser extent that is a common problem for galleries in general. Teaching rooms solve many of the problems for normal galleries but the paraphernalia of aquaria are usually difficult to fit into the traditional teaching room. Then there is the slight problem of staff time. It is probably true to say that the typical museum aquarium assistant curator has the most diverse job of any museum person ranging from heavy duty cleaning work to skilled dissection, analysis, and engineering construction, not to mention the odd lecture, or demonstration to a group who on special appointment have been squashed into the behind the scenes area not occupied fully by tanks, tubes or tubs of gravel.

Liverpool Museum is famous for its Natural History Centre where demonstrators talk to visitors about items from the reference collections in a purpose built attractive room. The same facilities are now exploited for school groups though it is true to say that we have not had the demand for National Curriculum related courses for specific topics - a general introduction to the objects in the Centre is the usual school class.

The success of demonstrators in the Natural History Centre led to their introduction to other areas of the museum. The aquarium grasped its opportunity through the Mersey Dock Watch Aquarium whose theme is the life that is found in the Mersey Estuary and particularly its dock system - life which is increasing in abundance as the Mersey is 'cleaned up'. This display was described at a previous BCG Meeting on the Greening of Museums and in the *Museums Journal* August 1991 page 33. A team of demonstrators who

were also maintenance personnel were essential not only to help run the display aquaria but also to operate the touch tank and the close-up video camera. The *only* successful, or even ethically acceptable, touch tanks in our opinion, are those where demonstrators or explainers or technicians (the name is not important) guide visitors through the experience with minimum livestock stress. The demonstrators also had a vital role in explaining about pollution in the Mersey Estuary and its reduction, which the life in the aquaria clearly exhibited was having beneficial results. This is superficially a simple subject but the historical, commercial, and engineering side needed covering as well as the biological. In other words it was only through cross-curricular elements that the correct impression could be given of the problem and its solution.

Although mainly a school holiday show it has proved very popular with school groups during the time its opening and term time have coincided. (During the 17 weeks it was open in 1991, 56,200 visitors had seen the displays of which 1,595 were children in 99 school groups which had booked a morning activity session with a demonstrator). Regrettably money has only been made available to operate this during the summer time. The reason is that demonstrators are expensive and whilst the stock could have been maintained with only one person, four were needed to provide an adequate demonstrator presence.

In the long term can demonstrators be replaced? A selection of interactive units will replace many of the labels and provide a much improved visitor experience on the gallery but for most class-room type of activity there will be interaction between live animal and pupil, and a trained mediator is required to prevent injury to either party.

So should we end on a confident note or a pessimistic one? The considerable potential of museum aquaria to increase their institutions contribution to the National Curriculum will be frustrated unless there are sufficient funds devoted to purpose built demonstration areas and, above all, to staff to run them. The present financial climate does not lead one to be optimistic; perhaps in the long-term we can be. If we were in America we would have a selected band of volunteers who we had trained who in return for the general feeling of being part of a worthwhile team, had agreed to devote a fixed period on particular dates to acting as demonstrators. If we were a large institution we might have hundreds on the rota, but even if we were small we might have 50. They would operate under the instruction of the paid staff and be principally involved in demonstrating or with routine maintenance. These wonderful people are called docents.

We are not as rich a country, but we also have less sympathetic unemployment benefit legislation, and also a work-force worried about jobs being replaced by volunteers. We see changes on the way and British docent armies on the horizon. We fore-see few recruitment problems as requests to work in the aquarium outnumber other work experience requests to the zoology departments. In the meantime we must strive to have aquarium facilities prepared for the docent army when it comes. To fail to do so will condemn museum aquaria and vivaria to the role of mere honey-pot

attractions for the institutions that house them, rather than the multi-faceted integrated asset they have the potential to be.

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[Papers based on the talks by Gordon Reid and by Brenda Norgain appear elsewhere in the current issue. A talk was also given at this point by Mike Cotton on 'Learning through Birds'.]

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Education and Conservation

by Rod C. Haynes - Displays Manager, The Sealife Centre Ltd., Blackpool.

During the last twenty years, the display of fish in public aquaria has made considerable progress. Initially aquaria exhibited fish in practically undecorated glass cages, often containing a single species. Today, mixed species tanks with environments provided for each of the species is more usual. The creation of ecosystems in miniature is the next step, simulating environments containing everything from sunlight to predators, and being an independent, self contained microcosm. This is evident in, for example, the Great Barrier Reef Mesocosm at Townsville, Australia, a 38m x 17m aquarium simulating the Great Barrier Reef.

This progress has been facilitated by a number of pressures. Public expectations of tourist attractions have risen; tourism is now a major industry and people will no longer tolerate poor quality displays. Aquarium technology has advanced, with acrylic panels enabling the production of tunnels, large transparent panels and new tank designs. Parallel technologies such as lighting, fibreglass and glass to glass sealing have also advanced, or been applied to the area of aquarium development, contributing to the higher standards of display seen today.

A major factor in the progress of aquaria is the new-found public awareness of conservation and the environment. It is no longer sufficient for aquaria to merely show fish; they must now also be environmentally conscious, meeting educational needs and conservation pressures.

The response to any survey of the public, inviting them to comment on areas of greatest concern within the Marine Environment, will be heavily influenced by whatever is in the news currently. The public has, collectively, a very short term memory. Thus, certain items are consistently found to be areas of concern; notably, oil pollution, sewage discharge, whaling and land based pollutants. More rarely, areas of concern include overfishing, discarded nets or the plight of individual species such as turtles. There is a whole range of issues that rarely reach public awareness. One of the responsibilities of a public aquarium is to be aware of these issues, and to be able to inform the public when necessary.

Advising and educating the public is often more difficult than it at first seems. The education programme at Sea Life Centres is three pronged, dealing with three different sections of the population.

Seawatch scheme.

The first is the SeaWatch scheme, which serves a number of purposes. SeaWatch is an information and research programme. In the public eye, it manifests itself as a bulletin board within the Sea Life Centre, where press cuttings relevant to the marine environment are displayed. It is therefore a passive education tool, relying on the public approaching it and reading it! It also serves as an education tool for the people who work within the Sea Life Centre. If their duty is to inform, they themselves must be informed. Sea Life Central Office scans the media in a far more efficient manner than could the individual sites, and disseminates information to each Sea Life Centre.

The "research" side of SeaWatch encompasses a number of aspects. Basking Shark Watch is operated by the Marine Conservation Society, and partially funded by Sea Life centres. It's aim is to learn about the biology and hopefully the population of these fish and to build a database to enable the species to be conserved.

Probably the most important aspect of SeaWatch is the Seal Watch programme. This originated at the Oban Centre, with a rear and release scheme for common seal pups. Each year, the Centre has reports of up to a dozen abandoned seal pups. Either the mother has died, or the pup has been moved, or for whatever other reason, the pup is alone. Under normal circumstances it will die. With the intervention of the Oban Sea Life Centre, the pup will be hand reared and after about 6 months, be returned to the wild. Rehabilitation schemes are also in operation for Loggerhead turtles that have been beached around the shore of the U.K. These are shipped back to the Mediterranean, where they are released back into the wild. SeaWatch also encompasses research on behalf of the animals within the Sea Life Centres, looking at diet, growth rates, disease susceptibility; the full range of any animal husbandry programme.

Public talks programme.

The other two aspects of education within Sea Life Centres involve the public talks programme and our schools packages. On a daily basis, a series of public talks and demonstrations occur giving the people within the Centre an opportunity to learn about various aspects of the species on display. At the Blackpool Sea Life Centre, these include touchpool demonstrations, allowing people to experience the creatures found in rockpools, such as shore crabs, starfish and mussels. SCUBA diving kit demonstrations also take place, giving people the opportunity to breathe through a demand valve, and see through a mask. The talk on British sharks and rays allows people to feed the fish by hand. From a conservation viewpoint, the most important talk is that on tropical sharks.

The "Jaws" image has seriously damaged shark populations, especially that of the slow growing, slow to reproduce, great white. Many people come to

the Sea Life Centre expecting to see large sharks in a feeding frenzy. It is to be hoped that after seeing the display, and hopefully hearing one of the talks or watching the video, they leave with an image of sharks as creatures to be respected, but not feared and indiscriminately killed.

Schools education package.

The schools education package is another very popular aspect of Sea Life Centres. Each year the Centres invite teachers to come and look around the Sea Life Centre, and to discuss with the education officer the educational resources available. With the advent of the National Curriculum, Sea Life Centres and many other establishments, had to revise their education programme. This revision is still going on. The aims of the programme however have remained the same; to illustrate to children the diversity of marine life; to teach them to respect the creatures and the environment, and to assist the teachers in the teaching of their curriculum.

At the Blackpool site, three "standard" talks are offered; a touchpool - aimed primarily at younger children and the appropriate National Curriculum area; mainly tactile and diversity based areas. A shark talk is non-science curriculum, and, interestingly, is rarely requested. The third is a pollution demonstration, focusing on environmental matters. This is aimed at slightly older children, and again covers areas of the National Curriculum. Here, the main areas of pollution are explained, including oil and sewage, together with some of the less evident ones - pointing out why plastic bags can be dangerous to dolphins for instance.

There is a range of resources for the teacher, including a series of worksheets to be used either at the Centre or afterwards in the classroom, and teachers notes. Each Sea Life Centre has an education officer who can advise and assist teachers in all aspects of marine environmental education.

These three areas of education, SeaWatch and the public and schools education programme, all aim to put forward an environmental message. Conservation of both species and environments is important. Establishments with living creatures have an ideal opportunity to educate people, and should take full advantage of this fact.
