

**Report of
Professional Development Activity
GTCNI STEM Bursary
2010 – 2011**

Undertaken by Stephen McCord

Glastry College



Introduction

Glastry College is a co-educational, all-ability college situated in a pleasant rural setting one mile outside Ballyhalbert on the Ards Peninsula. The City of Belfast is 25 miles away. The remoteness of the school presents costing, timing and staffing problems for transporting pupils to scientific exhibitions held in Belfast or beyond.

However, we recognise that we have an excellent resource - Queen's University Marine Laboratory (QML) - only a few miles away. The purpose of this bursary was to establish a link with QML and identify a KS3 project that could be undertaken.

Planning of the Activity

Contact was made with Dr Bjoern Elsaesser, a lecturer at Queen's University, Belfast. A visit around the QML identified that a project, involving the wave generator, could be carried out with a small group of KS3 pupils. However, in early October a fire in the building housing the wave generator meant that this project would have to be postponed until the building was rebuilt.

Still using the QML activities were identified, 'looking at alternative energy sources'.

- tidal generator
- wave power
- algae
- seaweed as biofuels

All these 'energy sources' were areas that the pupils would be able to see in action. Dr Sridharan Govindachary, Dr Graham Savage and Mr Philip Johnston were willing to meet and speak to a small number of pupils from Year 10 as a trial for this activity.

The Exploris Aquarium in Portaferry was also contacted. Mr Andrew Tease was willing to speak to the pupils on the environmental impacts of the Tidal Generator. This would give pupils a chance to look at the often hidden consequences that renewable energy generators have on the local environment and allow the project to have balance between the pros and cons of renewable energy generation.

Activity Undertaken

The Y10 Science Programme of Study has a unit where pupils are taught about renewable and non-renewable fuel energy sources. This was delivered to the Year group as normal. A group was then selected, encompassing all ability ranges across Year 10. They took part in an activity where they examined the environmental impacts of renewable and non-renewable fuel.



The activity consisted in working through a booklet involving Science, Geography (placing of the tidal generator in terms of local area), Technology (the reasons why the tidal generator has been designed with lowering and raising turbine) and Maths (the amount of energy that is generated on a day-to-day basis). A video clip of the tidal generator at Strangford Lough in action was shown (an excerpt from BBC's James May's Big Ideas). An electricity generator activity CD-ROM was also used to show the pupils some of the ideas around turbines and how they can be used. The pupils were all able to work independently through the booklet and some discussion was generated into some environmental aspects.

Evaluation of the activity

Although the initial project involving the wave generator had to be cancelled due to the fire at QML, we were still able to use their resources and extend the project to look at different renewable energy sources which are currently being researched there. The task planned has involved all aspects of STEM. The link with QML has been established and, as a College, we hope to have further contact with them in the very near future. The vocational Science setting has certainly inspired and enthused me; and I have already been able to bring into A-level Science some of the research that I have seen with the seaweed as a new potential energy source. It is also hoped that we will be able to allow the A-Level students studying our Applied Science course to have access to some of the facilities on offer.

A 3-4 hour session has now been planned involving Science, Technology, Geography and Maths. The work booklet that pupils use is accessible across ability ranges and the staff member using it can, where required, intervene with small group discussion. The video and computer clips are also useful in reinforcing areas of how electricity can be generated.

Only a small number of pupils from the College were able to visit QML and Exploris at this time. They all had an enjoyable day and the activity was found to be interesting and stimulating. Not surprisingly they enjoyed the time at Exploris as the SEAGEN radar monitoring unit was able to give them “live” action of what was happening to seals in the vicinity of the turbine. They also responded positively to the QML visit, although the majority of the pupils requested that some of the scientific terms be explained and reinforced by Powerpoints and diagrams.

The College are now hoping that an entire Year Group will be able to experience both the Renewable Energy activity followed by the visit to QML, SEAGEN radar monitoring unit and Exploris Aquarium. This would be part of a STEM week that is being planned in the next academic year.

Acknowledgement

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- Queen’s Marine Centre Laboratory Portaferry and its staff, including Dr Sridharan Govindachary, Dr Graham Savage and Mr Philip Johnston.
- The staff at SEAGEN Radar Monitoring unit.
- Mr Andrew Tease from Exploris Aquarium.

