

Clarkston Young Engineers

A Case Study

Background

Clarkston Young Engineers Club is run as an after school activity in Clarkston Primary School, Airdrie in North Lanarkshire. We have just completed our first year having run the club initially for 10 weeks involving approximately 20 pupils from primary 7 who volunteered to stay in school until 4.30pm every Tuesday. Two members of the teaching staff contributed their time and enthusiasm. The club was an enjoyable and rewarding experience for all. We are looking forward to resuming the club this session and intend opening it to primary 6 as well as primary 7. The younger group will be able to develop their skills over two years.

Science and Technology were a priority on the School Development plan last session. To raise awareness in these subjects a Festival Week committee was formed to organise a variety of activities and events, which would be enjoyable as well as educational for all the pupils in the school, to be arranged for a week in March.

Activities ranged from a Mad Scientist fancy dress parade, a digital camera competition, a balloon race (3 balloons were found in Germany!), potted science afternoons and visits were arranged by engineers from Summerlee Heritage Park and the science bus from Edinburgh University. The week was a big success!

We became aware of the Young Engineers Clubs which are organised by the Scottish Council for Development and Industry and decided to organise a club in the school which was launched to coincide with the schools Science and Technology Festival Week.

We contacted Sandy Moggach, the Young Engineers coordinator, to discuss the aims of the Young Engineers Club with members of the school management team. As well as giving a broad outline of what is happening in other schools he gave us ideas for projects we could attempt when our club was up and running. He also offered advice about pupil/teacher ratio, local and national events, buying equipment and accessing grants which could be available for expenses. There is an immediate "kick start" grant of £100 from SCDI for new clubs.

It was arranged that Sandy would visit the school in February to talk to the Primary Sevens to generate interest in forming a club. He showed examples to them of other clubs in action and the results of their efforts. Our local Careers Scotland Rep., Jean Shields, was contacted and she came the school on the same afternoon. Funding of £50 was available from this source.

Getting Started

As the club was being run after school we realised it would have to be relaxed and enjoyable if our volunteers were going to turn up every week! We started each week with a drink, a snack and a chat before starting our activities. For the first few weeks we worked on small design projects using the school technology kits as a basis. Activities included making a Long Distance Egg Mobile and a catapult for propelling a red nose through the air for Comic Relief Day.

Two representatives were elected to look through catalogues to source and help choose equipment for the club. They chose a variety of technology equipment including cams to make cam toys and books on model making and design.

A cheque account was also set up in Airdrie Savings Bank which required a pupil's and a teacher's signature. Although we have not applied yet, a grant should be available from the bank as the club is recognised as an Enterprise.

We also sent to the British Model Flying Association for model plane kits which the children enjoyed constructing. They required precision and careful attention to instructions and detail.

A group of children decided to enter a competition organised by The Institution of Civil Engineers in Scotland to design a water storage and irrigation scheme for an African Village. This took up a lot of their time. It involved valuable research and problem solving, and it tested their design skills and model making abilities. The group felt a real sense of achievement when their design work was eventually complete after facing many challenges and modifications to their original design. It was an excellent exercise in learning how to work co-operatively as a group and how one should listen to and respect the opinions of others.

Business Links

We also took this opportunity to establish links within the community by contacting D&G Precision Engineering Ltd, a local company in Coatbridge. This link with industry was very fruitful for our club. An engineer from the company visited the club and offered help and advice about our projects. Carol Donnelly, the marketing director of the company also visited with a selection of machined components. We had to try and work out what they were. A visit was also arranged to their premises where we had a tour and could watch work in progress. We also got a preview of two machines they had recently invented. We came away loaded with sweets as D&G work closely with Lees the confectioners!

We were lucky enough to be contacted by Bill Hutchison from the Institute of Applied Technology who asked if we would like a visit from himself and Prof. Ian Watts to run a workshop. They kindly agreed to work with the two Primary 7 classes to introduce them to robot technology. They are both involved with the BBC programme *Techno Games*. We were very lucky to be included in such an exciting project.

Outcome

The climax of the year was being invited to the Young Engineers Clubs Showcase and Technology Challenge at Hampden Park in June. Having never been before we weren't sure what to expect but everyone from our club had a marvellous day. There was a great buzz about the place and the enthusiasm of the young people who were involved was tangible. It was inspiring to see the work that is being done in other clubs across Scotland and we left feeling motivated and excited about the future.

Clarkston won the Primary Showcase Section receiving a trophy and a cheque for £250.

We also won the primary section of the Civil Engineering competition.

Benefits

Starting a Young Engineers club has greatly benefited pupils and staff in the school and enriched the curriculum. The activities enhanced a variety of skills valuable in the development of the educated child. These include Problem Solving, Investigation, ICT, Language, Mathematics, Teamwork, Technical Skills and Critical Thinking.

The group also took control of finance and organisation and choice of equipment. General health and safety awareness was raised as a secure and well supervised environment was a priority.

When we started this venture we had no idea where it would lead us. Neither of us, the club leaders, had any specialist skills in the area of engineering but we were there to offer support and advice. The children took the initiative, they developed their ideas and Clarkston Young Engineers evolved as a partnership between staff, pupils and the wider community..

We would recommend starting a club, the rewards for everyone involved have been worth all the time and effort.

Club Update

It is now four years since our club was formed and we're still going strong! Pupils are still keen to join and staff remain enthusiastic.

We have continued to develop our ideas and try new projects, not all successful, but we continue to learn and adapt. Our club caters for a wide range of abilities and skill levels so we endeavour to find projects that allow all levels of participation, co-operation and team work.

Weekly technology challenges, e.g. bridge building, towers etc., are very popular at the start of each year. These use basic equipment and materials readily available in schools which give practice in handling and working with them. With money that the club has won in various competitions we have been able to buy technology kits and equipment which also benefit the school.

Each year we enjoy entering competitions which are publicised through the Young Engineers' news letters. We have recently been awarded £800 from Rotech for a project on renewable energy and £350 from The Institute of Civil Engineers for our Powerpoint presentation on reducing energy waste in our school. We were also invited for a VIP visit to the new Clyde Arc bridge before its official opening to the public. Other successes include two of our members winning Strathclyde University's Challenge of Engineering Trophy. We find competitions provide structure and direction.

Annual outings are a popular event. We have toured a nuclear submarine at Faslane, watched thousands of potatoes being sorted and packed by machinery at Bartletts' factory and have been invited to tour the new Air Traffic Control Centre at Edinburgh Airport.

The school has been offered opportunities through our Young Engineer connections. We were invited to pilot an innovative challenge by Bett which linked schools across the United Kingdom through the Internet as they worked on challenges.

A recent HMI report on the school noted "Pupils' close links with the wider community, particularly the Scottish Council for Development and Industry, enhanced their learning and very successfully promoted their achievements."

We are pleased to see that every year the number of primary schools attending the Celebration of Engineering is increasing and hope that this trend continues as more schools realise the benefits of running a Young Engineers' Club!