

INSPIRING THE NEXT GENERATION



STEM
in action



Sentinus
Science Technology Engineering Mathematics



"What a pleasure to have you in school with the Year 5 - 7 classes this week. The children did find the work challenging but enjoyable. We have featured the work on our website and the local press. I feel from the staff the length and format of the sessions were just right and helpful to all. Please include us on any future list for visit, thank you for including us this time around."

Roy McClelland, Principal
Kells and Connor Primary School

"I just wanted to thank you again for travelling to St. Ciaran's, Ballygawley and delivering the Digital Futures Roadshow. The students really enjoyed the day and got so much out of it.

The winners who will compete at the Celebration Event were at my classroom door first thing this morning to pick up from where they left off yesterday... they were so enthusiastic about it all and some had even looked at google app inventor last night. Thanks again so much for everything."

Michelle Donnelly, HoD ICT
St Ciaran's College

Sentinus, supported by the Department of Education, is making a vital contribution to the Northern Ireland economy by helping industry and business address STEM skills shortages.

We give young people, aged 5 - 17, real experience of research and development, problem solving, careers in STEM, attending our local universities and much more, sparking excitement at an early age and inspiring them to study science, technology, engineering and maths and pursue careers in the sector.

Through participation in Sentinus programmes, young people of all ages develop important employability and STEM skills, helping them prepare to become contributors to the local economy. They gain a real understanding of the value of the subjects as a foundation on which to build any career.

With a focus on practical experience and problem based learning, working with schools throughout Northern Ireland, Sentinus provides:

- ▶ Research & Development Projects and Placements;
- ▶ STEM Problem Solving Challenges and Workshops;
- ▶ Careers Awareness Programmes;
- ▶ STEM Roadshows & Summer Schools;
- ▶ Computer Coding Activities;
- ▶ STEM Competitions and Celebration Days;
- ▶ Extended STEM Projects

Sentinus works with a wide range of partners and UK professional bodies, delivering national programmes in Northern Ireland. Independent research carried out by some of these partners demonstrates that our practical engagement programmes have a significant impact on how young people view the STEM subjects and careers in the sector.



How we do it...

STEM Workshops Masterclasses & After Schools

Hands on, problem solving, science, technology and maths sessions for 8 - 17 year old pupils. Workshops are designed for younger age groups and can last between 3 and 6 hours, activities can be tailored to suit requirements. Masterclasses are for GCSE and A/AS level students and usually last 2-3 hours. These activities are excellent for Extended Schools or Shared Education.

Activities are curriculum relevant, support subject learning and promote development of a range of skills and capabilities including:

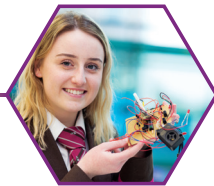
- ▶ Problem solving;
- ▶ Working with others;
- ▶ Creativity;
- ▶ Self management;
- ▶ Managing information

Digital Skills & Computer Coding Workshops

A range of full and half day activities focusing on the development of computer programming skills for 8 - 17 year old pupils. Ranging from the use of drag and drop programming to writing code in a number of languages, pupils learn about programme structure and variables, operators, counters, open and closed loops, subroutines or function calls and much more, all done in a fun and rewarding way.

Activities include:

- ▶ Robotics;
- ▶ App development;
- ▶ Digital design





Project Based Learning in STEM

Sentinus delivers a range of longer term, project based learning programmes which involve links with ambassadors from local companies who support pupils during the project.

These programmes are designed to support learning in STEM subjects for young people aged 8 - 17, covering areas including:

- ▶ Working with others;
- ▶ Creativity;
- ▶ Self management;
- ▶ Managing information

Work Related Learning Programmes

Sentinus organises a number of programmes which give A level (and equivalent) students the opportunity to work with STEM professionals over an extended period. Our research placement schemes give students a chance to spend up to six weeks working on a STEM research project, while Team R&D allows them to work on live research and development projects with local companies over a period of five months. These experiences develop understanding of the workplace and the role of engineers and scientists, enhance awareness of STEM careers and contextualise A level studies.

They include:

- ▶ Sentinus Team R&D;
- ▶ Insight programmes;
- ▶ Nuffield Research Placements.



STEM in action...

Exhibitions & Celebrations

As part of the Big Bang Near Me programme in Northern Ireland, Sentinus organises several events throughout Northern Ireland each year to celebrate the achievements of young people in STEM, giving them an opportunity to exhibit their project work in a public forum. These events include a wide range of interactive workshops and STEM shows to enhance the experience for pupils.

Young Innovators, the regional Big Bang Fair, involves more than 3,000 young people annually. Students compete for the opportunity to represent Northern Ireland at national and international STEM Fairs.

STEM Awards & Competitions

Sentinus organises and manages a number of competitions and award schemes for pupils, from ages 8 - 19 years, which aim to engage, enthuse and excite them and reward excellence in the STEM subjects.

These awards and competitions include:

- ▶ CREST Awards & CREST Investigators;
- ▶ Junior Industry Challenge;
- ▶ Junior Innovators;
- ▶ Primary STEM Challenge;
- ▶ K'Nex Construction Challenge;
- ▶ Digital Futures;
- ▶ F1 in Schools.





Employability Skills & Personal Development

Programmes supporting young people in planning for their future, covering areas including:

- ▶ Career planning;
- ▶ Interview skills;
- ▶ Learning skills;
- ▶ Personal effectiveness;
- ▶ UCAS & personal statement preparation;
- ▶ Prefect training

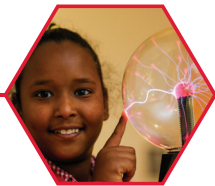
Programmes support young peoples' learning for life and work and help develop a range of skills and capabilities. Students' motivation, aspirations and achievement can be enhanced by these programmes.


After School Activities

Sentinus provides a wide range of curriculum support workshops and activities which help schools link with the local community and engage parents in their childrens' learning.

"I really enjoyed the Robotics Roadshow - I liked working on the laptops and using the programming software to control the robots. The STEM Careers talk was interesting and it showed me all of the different careers I can do through engineering. It was really exciting to look at how planes of the future will be built. I really enjoyed the day and I would highly consider a job in engineering in the future."

Year 10 Pupil
St Fanchea's College





"Please can I pass on my thanks to all who were involved in the Young Innovators Workshops yesterday. Everything was extremely well organised and the children gained so much from attending. Today in class many of the children explained how they had gone home and recreated some of the experiments that they had seen for their families. When asked what they enjoyed most from the trip many of them said 'Everything, from the start to the finish!'"

**Heather Beattie, Teacher
Towerview Primary School**

"Pupils have been talking about the demonstrations and staff have expressed to me how worthwhile they felt the event to be, both as a stimulus for creative thinking and as an insight into the value of STEM subjects."

**Robert Johnston, HoD Technology
Cookstown High School**



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