



**Sentinus**  
Science Technology Engineering Mathematics

# INSPIRING THE NEXT GENERATION

"A massive thanks for allowing Cookstown High School to be part of the Code Club project. It has been a fantastic experience for our pupils providing development in more ways.

These have included, among many others: Knowledge Development, Computational Skills, Problem Solving, Team Working, Communication and Time Management.

As with any project, we have our superstars who raced ahead but some of the most notable success stories are unexpected heroes who have dealt with and overcome challenges and barriers to succeed."

Robert Johnston, Head of Computing,  
Cookstown High School

"I have been raving about how good the workshops are for ages - our P 3 teacher has also been converted now too after her experience last year. You are a victim of your team's success!

We are more than grateful for any support from Sentinus. As the WAU co-ordinator, I personally, along with the staff and children involved, feel reinvigorated about Science and Technology after your team's visits."

Claire Byrne, Acting Principal,  
St Nicholas Primary School, Carrickfergus



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

We give young people, aged 4 - 17, hands on experience of problem solving, research and development, 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 STEM and employability 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.

Sentinus helps teachers at all levels deliver curriculum relevant science and technology activities, to support learning in STEM subjects.

With a focus on practical experience and project 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 Workshops & Summer Schools;
- Digital Skills Workshops & Programmes;
- STEM Competitions and Celebration Days;
- STEM Project Based Learning Programmes.

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 workshops for 4 - 17 year old pupils. A range of workshops for all age groups which last between 2 and 6 hours, activities can be tailored to suit pupil/teacher requirements. Masterclasses are for GCSE and A/AS level students and usually last 2-3 hours. All of these workshops 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 Workshops & Programmes

A range of full and half day activities focusing on the development of computer programming skills for 5 - 17 year old pupils. Ranging from the use of drag and drop programming to writing code in a number of languages (Scratch, Basic, C#, Python/ MicroPython, Processing, Java, App Inventor) 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;
- Cyber security;
- Game development.

## 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 their project.

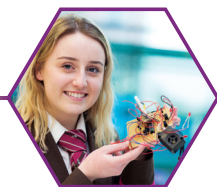
These programmes are designed to support learning in STEM subjects for young people aged 8- 17, covering areas including:

- Problem solving;
- Logical thinking;
- Communication;
- Working with others;
- Creativity;
- Self management;
- Managing information;
- STEM Careers.

## Work Related Learning Programmes

Sentinus delivers 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 four 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, including:

- Sentinus Team R&D;
- Insight programmes;
- Sentinus Research Academy.



# 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.

Sentinus Young Innovators, is an annual event providing the opportunity for students to exhibit STEM project work in a competitive environment. They compete for the opportunity to represent Northern Ireland at national and international STEM Fairs, including the International Science & Engineering Fair (ISEF) in the USA each year.

## 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:

- 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;
- Mental Health & Wellbeing
- 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.

Activities can be tailored to meet the needs of extra curricular activity taking place as part of shared education, extended schools or lunch time/after school clubs.

## Teacher TPL/CPD

Sentinus provides valuable Teacher Professional Learning for primary teachers to support delivery of science, technology and maths within the World Around Us area of learning in the NI curriculum. TPL sessions can be tailored to address topics and themes used in classroom teaching.



“A big thank you for a great workshop on Machine learning. This was a real eye-opener for the Primary 7s, they loved the challenges set and the guidance they got from the Sentinus trainer throughout. I was really pleased with the pupils’ reactions, they seemed to grow in confidence as time went on, also, I learned a lot myself. Thanks again.”

Tony Morrison, P7 Teacher,  
Chapel Road Primary School, Derry

“Many thanks for this fantastic opportunity. The Coding Club was a great success, in fact I could see this becoming a permanent fixture of the after-school activities for our younger students. The senior students, who led this initiative, really came to the fore and showed excellent leadership and teamwork skills.

It impacted hugely on one student, whose attendance was at a chronic 65%. Being part of this initiative helped him immensely. He led the Coding Club from start to finish and his attendance improved to 100%. He also bought the equipment that was used at the ambassador training, as he was so intrigued with everything that was delivered.”

Catherine Hughes, Teacher,  
St Paul’s High School, Bessbrook



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