

# BORRISOKANE COMMUNITY COLLEGE



## STE(A)M EDUCATION POLICY



**etb**

Bord Oideachais agus  
Oiliúna Thiobraid Árann  
*Tipperary Education and  
Training Board*

## STE(A)M Education Borrisokane Community College

2021

### *Borrisokane Community College Mission Statement*

*We seek to promote a caring and committed school community which will facilitate the education of our students and where each individual is valued as a unique human being.*

*“Is ar scáth a chéile a mhairimid”*

### **What is STE(A)M?**

Science, Technology, Engineering, Arts and Mathematics permeate every aspect of today’s world, and the innovations that emerge from these fields underpin much economic development leading to the establishment of creative enterprises and rewarding careers.

People working in STE(A)M in Ireland are changing the face of the world we live in everyday, whether it is by making life-saving drugs and devices, researching new cures for cancer or creating new technologies that keep us healthier, safer and of course, entertain us.

Our education system plays a key role in equipping learners with the knowledge, skills and dispositions to effect these changes.

**Science** enables us to develop our interest in, and understanding of, the living, material and physical world and develops the skills of collaboration, research, critical enquiry and experimentation.

**Technology** covers a range of fields which involve the application of knowledge, skills and computational thinking to extend human capabilities and to help satisfy human needs and wants, operating at the interface of science and society.

**Engineering** is about the design and creation of products and processes, drawing on scientific methods to provide the skills and knowledge to solve real-world problems.

**Art(s)** is about creativity and design, develops critical thinking skills.

**Mathematics** equips us with the skills needed to interpret and analyse information, simplify and solve problems, assess risk, make informed decisions and further understand the world around us through modelling both abstract and concrete problems.

STE(A)M education focuses on developing a range of Key Skills that are essential for living and working in today’s world. Learners will engage in a range of activities that include:

- using their skills and content knowledge to creatively solve problems
- imagining, questioning and exploring
- collaborating with others
- engaging in inquiry and analysis
- innovating, designing and making
- testing and modifying their solutions to complex problems

### **Performance of Irish students - Rationale for promotion of STE(A)M**

Irish students’ performance is significantly weaker than that achieved by students in countries where STEM performance is outstanding. Their performance in the Trends in Mathematics and Science Study (TIMSS) and the Programme for International Student Assessment (PISA) shows that:

- TIMSS 2015: At 4th Class in primary level, Irish students ranked 2nd in Mathematics out of the 22 participating EU member states/territories and 9th out of all 49 countries participating. Irish students ranked 10th in Science out of the 22 EU participating member states/territories and 19th out of all 47 countries. At post primary level, second year students ranked 1st in Mathematics out of the 8 EU participating member states/territories and 9th out of all 39 participating countries. In Science, Irish students ranked 3rd out of the 8 EU participating member states/territories and 10th out of all 39 participating countries.
- PISA 2015: In Science Irish students ranked 6th among EU member states/territories and 19th out of all countries participating. In Mathematics, Irish students ranked 9th among EU member states/territories and 18th out of all countries participating. This data shows the progress that we are making in relation to STE(A)M education and while it indicates encouraging trends an analysis of the uptake of Mathematics in the Junior Cycle Examination, from 2012 to 2017, shows an increase in the proportion of students taking higher-level, from 52% in 2012 to just above 59% in 2017. The proportion of girls taking higher-level Mathematics in the Junior Cycle increased from 24% of the Mathematics cohort in 2012 to 29% in 2017.

There has also been an increase in the proportion of students taking higher-level Mathematics in the Leaving Certificate in recent years. In 2017, 30% of Leaving Certificate students sat higher-level Mathematics, an increase of 8% from 2012. In 2017, 41% of the total cohort who sat higher-level Mathematics were girls, a decrease of 5% from 2012.

In 2017, 14% of all students sat Physics and 17% sat Chemistry at Leaving Certificate. Both Physics and Chemistry have shown a small increase in uptake from 2012 to 2017 (+1.3% and +3.6% respectively). With regard to uptake of Science subjects by girls at Leaving Certificate in 2017, almost 60% took Biology, while less than 20% took Physics or Chemistry. The numbers of Leaving Certificate students taking Engineering in 2017 was 9% while in Technology the uptake was slightly less than 3%.

We at Borrisokane Community College will look to promote STE(A)M with the aim of increasing uptake in STE(A)M for all.

### **Objectives for STE(A)M Borrisokane Community College**

#### **For learners:**

- We will provide a STE(A)M education experience that enables all learners, including those at risk of educational disadvantage and learners with special educational needs, to participate, influence and succeed in a changing world
- All learners will have an understanding of STE(A)M disciplines, methods and processes, and an attitude towards STE(A)M education
- Uptake of STE(A)M related subjects will increase for learners of all backgrounds, ability and gender, with a particular focus on uptake by females
- All learners will have access to information on STE(A)M careers

#### **For Teachers:**

- Teachers will have an understanding of STE(A)M disciplines, methods and processes
- Building on cultures of collaborative professionalism, teachers will provide effective and engaging STE(A)M teaching, learning and assessment approaches where appropriate
- Teachers where practicable will provide collaborative environments, both in and out of school, for STE(A)M learning, fostering curiosity, inquiry, persistence, resilience and creativity

- Teachers will share STE(A)M practice in collaborative settings

**For Community:**

- Our students will be equipped with the relevant STE(A)M skills and understanding to engage and lead in an ever-changing world
- Our students will be enabled to actively engage in informed STE(A)M discussions
- We will encourage a growing proportion of school leavers into STE(A)M studies and careers

**Targets and Implementation of STE(A)M in Borrisokane Community College 2020-2022**

- Increasing participation of learners in STE(A)M education
- Create a STE(A)M Team in school-student lead
- Increase uptake of STE(A)M subjects for learners of all backgrounds, ability and gender increasing awareness of STEM education
- Undertake awareness programmes that promote STE(A)M
- Enhance support for learners to make informed choices about STE(A)M higher and further education and training options
- Provide for digital technologies to support STE(A)M education
- School to establish links with business and industry
- Provide STE(A)M training for all staff
- STE(A)M to be developed through SSE and SIP
- Introduce Computer Science as a Leaving Certificate subject

**SSE - Looking at our Schools**

**Domain 2 - Learner Experiences**

<p><b>Students experience opportunities to develop the skills and attitudes necessary for lifelong learning</b></p>	<p>Students make meaningful connections between learning in different subjects and areas of the curriculum.</p>	<p>Students make meaningful <b>and authentic</b> connections between learning in different subjects and areas of the curriculum.</p>
	<p>Students make meaningful connections between school-based learning and learning that takes place in other contexts.</p>	<p>Students make meaningful <b>and authentic</b> connections between school-based learning and learning that takes place in other contexts.</p>
	<p>Students can, with some guidance, transfer and apply skills learned in one context to another context.</p>	<p>Students can, <b>of their own initiative</b>, transfer and apply skills learned in one context to another context.</p>
	<p>Students are aware of the key skills underpinning the curriculum and of their relevance to present and future learning.</p>	<p>Students <b>can explain</b> the key skills underpinning the curriculum and <b>understand</b> their relevance to present and future learning.</p>
	<p>They take the opportunities provided by curricular and other learning experiences to apply and develop these key skills.</p>	<p>They take the opportunities provided by curricular and other learning experiences to apply and develop these key skills <b>consciously and deliberately</b>.</p>
	<p>Students have an age-appropriate understanding of the concept of lifelong learning, and are well disposed to continuing education and training.</p>	<p>Students have an age-appropriate understanding of the concept of lifelong learning, and <b>see themselves engaging in</b> continuing education and training.</p>

## Domain 4 – Teachers’ Collective / Collaborative Practice

<p><b>Teachers work together to devise learning opportunities for students across and beyond the curriculum</b></p>	<p>Teachers plan collaboratively for learning activities that enable students to make meaningful connections between learning in different subjects.</p> <p>Teachers collaboratively plan learning experiences that help students to see learning as a holistic and lifelong endeavour.</p> <p>Teachers work effectively with each other and with parents to support students with identified learning needs.</p> <p>Teachers use parent-teacher meetings and other communication with parents constructively to support parents’ meaningful involvement in their children’s education.</p> <p>Teachers collaborate with relevant and appropriate outside personnel to provide meaningful learning experiences for students.</p>	<p>Teachers plan collaboratively for learning activities that enable students to make meaningful <b>and progressively more challenging</b> connections between learning in different subjects.</p> <p>Teachers collaboratively plan learning experiences that <b>enable and empower</b> students to see learning as a holistic and lifelong endeavour.</p> <p>Teachers work <b>very effectively</b> with each other and with parents to support students with identified learning needs.</p> <p>Teachers use parent-teacher meetings and other communication with parents <b>very constructively</b> to support parents’ meaningful involvement in their children’s education and <b>development as learners</b>.</p> <p>Teachers collaborate with relevant and appropriate outside personnel to provide meaningful learning experiences for students, <b>and work together to ensure that the learning is integrated</b>.</p>
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