

The  
World  
Needs  
STEAM



### Discover STEM & Arts

Engage, Discover, Transform,  
Empower, Sustain



steam Education Ltd.  
M A G A Z I N E

Join us in exploring  
between the lines

"Already in the not so deep places of our  
minds there is no boundary..."

John Moriarty - Invoking Ireland

Kids Art

Recreation of Vladimir Kush  
painting, "Always Together",  
by Kyle Barry, age 10.



A word from  
the Editor

Alice  
D'Arcy



Welcome to the very first edition of our new e-zine, **The World Needs STEAM!**

At STEAM Education we have been working with Science, Technology, Engineering, Maths (STEM) and Arts experts from academia and industry since 2014 to support and enhance STEAM education for children and adults, starting at primary school level.

We are committed in a broader sense to increasing awareness of the critical functions STEM and Arts play in our lives and our societies; to engaging in transdisciplinary collaborations for innovative problem-solving; and to exploring and learning about the fascinating world that we share.

We hope you enjoy it.

*Dr. Alice D'Arcy is Managing Director of STEAM Education Ltd since 2015. She has channelled a broad range of professional experience, from ecology to animation, development education to sustainability management, into the development of STEAM approaches to learning and teaching.*

*A strong advocate of life-long learning she has a variety of qualifications from Applied Ecology (BSc) & Applied Environmental Science (PhD), Creativity & Change: Arts, Participation and Development (L8 Crawford/CIT), Creative and Digital Marketing (UCC Cert), and Art Therapy for Socio-Educational Interventions (Cert ddf+).*

*She is passionate about lots of things, including cats, chickens, science, creativity, growing things - especially native trees - and getting her hands dirty.*

# Contents

**FEATURE:** ..... **3**  
The World Needs STEAM

**STEAM supporters:** ..... **5**  
Thank You!

**ENGAGE:** ..... **7**  
Get to know STEAM

**DISCOVER:** ..... **11**  
Genomics featuring  
Genuity Science

**SUSTAIN:** ..... **13**  
THINK GLOBAL,  
ACT LOCAL

**SUSTAIN:** ..... **16**  
Nature

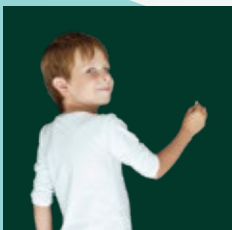
**TRANSFORM:** ..... **17**  
Perspectives

**EMPOWER:** ..... **18**  
STEAM Kids



**SEAMUS DEVLIN**

Founder | Scientist  
| Entrepreneur | Businessman



Our world is facing huge challenges and desperately needs creative people. Scientists, technologists, engineers, artists and mathematicians; people with the knowledge and skills to create a better world.

**PROFESSOR JOHN O'HALLORAN**

Deputy President and Registrar at UCC  
| Zoologist | STEAM Engagement Advocate



"We need to educate cohorts of young people, from primary school onwards, to prepare them for jobs and careers that don't even exist yet. STEAM Education is a really important approach to combining and enriching the learning and teaching of STEM and Arts subjects to do this as early as possible. It's about giving young people the opportunity to learn, and to grab the opportunities coming down the tracks in future skills. Actively linking STEAM primary school students with third level institutes, such as STEAM has done here with UCC STEM postgraduates, and with STEM professionals from industry, further enhances the potential for children to understand and pursue the multitude of opportunities to pursue exciting STEAM careers."

<https://john-ohalloran.com/>  
Why STEAM Matters

**Kevin O'Callaghan**

Telecommunications industry business leader  
| Eco-sustainable house & garden constructor



I was so impressed at the positive influence the STEAM programme had on my kids when the then fledgling programme started in their primary school (late 2000's) that I teamed up with Seamus to assist in the development of STEAM as a business during its early years.

I believe that industry has a social responsibility to nurture the talents of young people in their local communities. Science-based education is crucial in today's ever more technological world and the integration of science and the arts within the educational environment will be a fundamental advantage for societies in the future.

**PROFESSOR COLETTE MURPHY**

Associate Professor of Education, TCD  
| CoTeaching Expert



I have worked in the area of STEM interventions and co-teaching for many years on many interesting projects, but this is the best that I have been involved with. The combination of using hands-on STEAM approaches, the team's understanding of what really benefits primary schools and children, and the engagement of diverse

enthusiastic "real-life" STEM experts to co-teach really works. We need more of this!

<https://tcd.academia.edu/ColetteMurphy>  
Children's voices in Science Education

**FIONA NAUGHTON**

Naughton Foundation



The Naughton Foundation have supported this initiative since 2014 and are very happy to continue to do so. I think it is important that children start to engage in STEAM education as early as possible because I think this will influence the future course of their lives.

[www.thenaughtonfoundation.com](http://www.thenaughtonfoundation.com)

**LINDA EGAN**

Client Engagement - Engineering



Linda joined STEAM in 2015, bringing with her twenty five years' experience in sales and marketing. Linda works with senior management in companies throughout Ireland, enabling us to link industry with education, largely through corporate social responsibility frameworks, particularly in the area of engineering. Linda also assists companies to maximise the positive PR opportunities that arise from engagement with STEAM programmes in primary schools and communities.

**GREG SCULLY**

Accounts, Procurement & Technical Support



Greg is our combined accounts, procurement and technical support section. Having spent twenty-plus years in Computer Software & Systems Development/Administration, mostly for medium-to-large or multinational companies, he joined STEAM in 2016, and now directs his skills towards assisting the company with its financial and technical management.

**JULIET HAYKAL**

Graphic Arts & Workshop



Juliet joined the STEAM team in 2018 as our Graphic Design Specialist and Workshop coordinator. She has 7 years of working experience in the areas of Visual and Graphic Arts as well as a background in International Relations after working for NGOs, embassies and Inbound Marketing companies in the Middle East and Latin America.

**DAVID NOLAN**

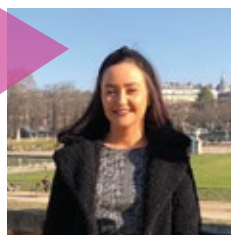
Business Development Executive



David joined the STEAM team in 2019 as our Business Development Executive. He had 14 years of previous experience in the areas of programme management, training, recruitment and funding proposal development in the charity sector.

**AMY SCANLAN**

Office Administrator



Amy joined the STEAM team in 2019 as our office administrator. She has a Bachelor of Business degree and is responsible for obtaining and organising information for recording, registration and payment purposes. She also processes Garda vetting applications and results to ensure all co-teachers are eligible to deliver STEAM programmes in the schools.



## The World Needs STEAM



**"Students who receive a STEAM education engage in experiential learning, collaborate with others, and persist in**

**problem-solving as they take thoughtful risks and work through the creative process.**

**In fact, many employers, educators, and parents believe STEAM helps fill in a gap left by STEM"** by

developing key skills and competencies that children need to thrive. This recent feature in **Forbes** magazine highlights the increasing need, desire and drive from the business world towards enhancing education through STEAM approaches to empower children and young people to meet and address a multiplicity of complex real world challenges.



The COVID-19 pandemic has certainly highlighted to the world the critical role of STEM and Arts in our lives, and in the functioning of our society. In the face of a global health crisis, when everything in our lives was being turned upside down, we looked to STEM and Arts communities around the world for assistance.

**We look to the world of Science in the hopes of fast-tracking a vaccine for COVID-19; to the world of Technology to keep us all connected during these times of social distancing and cocooning; to the world of Engineering to design and deliver personal protective equipment that will keep our front-line workers safe; to Mathematics to understand the numbers and flatten the curve; and last, but by no means least, to the Arts – which keep us engaged, entertained and provide us with solace, connection and hope.**

However, arguably the most exciting and hopeful element of the Covid-19 response has not been from any individual sector, but from the unprecedented degree of **collaboration** and communication in the global research and industry **communities** towards advancing treatments and vaccines. Indeed, across broader society, creative solutions have been developed from all sectors and all age-groups to all kinds of Covid-related challenges. In Ireland for example, the design and manufacture of Personal Protective Equipment took on a life of its own with everyone from school children in **Kinsale, Co. Cork**, to the Irish Country Women's Association, and people living in Direct Provision centres joining hordes of small businesses who **innovated their production**, along with well-established industries in those sectors converging to support some element of the COVID-19 response.





Ireland's education system is cited as amongst the best in the world. It ranks in the top 10 globally as an education system that meets the needs of a competitive economy. The country is implementing a comprehensive, forward-looking National Skills Strategy & Action Plan for Education, which aims to make Irish education and training the best in Europe by 2026. The **STEM Education Policy**, the **Creative Ireland Programme** and a number of other state, industry and private initiatives are all working towards improvement of the system.



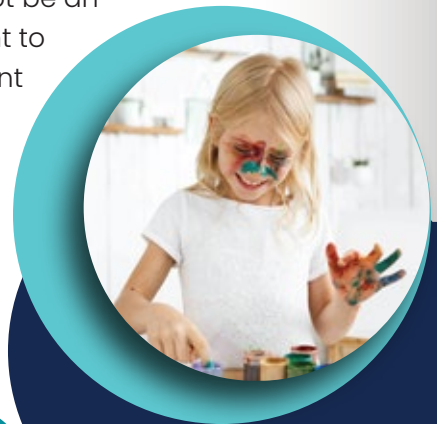
Despite the expanding number of routes to entry into STEAM sectors, the graduate and apprenticeship numbers are failing to meet the current demand. While progress has and is being made around gender issues, obstacles continue to exist for girls and women entering and remaining in these industries.

We feel that there is a significant gap in the early education system which is critical to addressing the longer-term skills shortage, the development of broader competencies in children, future-proofing industry, and empowering children to engage in creative problem-solving to secure their future. Increasing evidence from the fields of neuroscience and **developmental psychology, education, and social sciences** supports this position. In short, early intervention is key. And we want to do more!

At **STEAM Education Ltd**, we collaborate with progressive primary teachers and schools, and diverse role models from STEM and Arts industries and academia. The success of early intervention must not be an accident. It will need purposeful engagement, creative support and focused investment to fulfill its true potential. We couldn't do it without the foresight and committed involvement of the STEM and Arts professionals from the 50+ collaborating organisations. The combination of early intervention with a STEAM approach has the potential to break boundaries and to create new frontiers, to educate and empower students and teachers alike to be at the forefront of the economy of the future.

## What is STEAM?

While holistic/integrative education is not a new concept, the use of the acronym STEAM is relatively new to most people. STEAM stands for Science, Technology, Engineering, Arts and Maths. Attributed to researcher and educator **Georgette Yakman** STEAM was initially pioneered as an integrative educational concept specifically connecting STEM and Arts in the USA, and later in **Europe**. Yakman described it as "Science and Technology, interpreted through Engineering and the Arts, all based in elements of Mathematics." The field continues to evolve and grow around the world.





# Big Thank You to all our supporters, partners & schools!



We are delighted to work with 50+ organisations in ROI & NI including STEM industries, local authorities, and the **Naughton Foundation**, to support STEAM programmes in primary schools every year.



"I loved our work as young engineers. I learned a lot of new things and it encouraged me to believe in myself no matter what."

**Layla** - P6, Moneyrea Primary School, NI



**STEAM collaboration on Health Sciences for Children with the National Paediatric Hospital Development Board.**

Image featuring pupils from Canalway Educate Together, Basin Lane, Dublin 8 with John Corcoran, Advanced Nurse Practitioner, Children's Health Ireland at Crumlin.





"The kids really loved the hands-on programmes, and their interaction with scientists and engineers opens up a whole new world of opportunities for them. It greatly encourages the children and young people to consider STEM careers and to progress to second and third-level education. In our experience, it goes beyond the classroom, with parents, teachers as well as students being enthused. The programme is an investment in the future as it gives each child, regardless of their ability, an equal opportunity to participate, question and offer opinions".

**Nuala Stewart** - Cork City Council  
STEAM Education & Learning Neighbourhoods Partnership



"After a fantastic 10 weeks inspiring kids to be curious about the world we live in, from science and engineering perspectives, the final day showcase really captured the essence of the STEAM programmes and how rewarding it is for us to make a difference to the community in which we operate."

**Raymond Hale** - Alexion College Park



STEAM Engineering-in-a-box is without doubt the most educational and fun programme we have ever participated in, bar none! From building bridges and prosthetic arms to designing sweet factories, the level of engagement from my class of 31 students was amazing. The transformation in some of the students was a joy to behold. EIAB has definitely sparked the creative side of students and staff alike. I couldn't recommend it enough.

**John Keane** 5th & 6th class teacher  
Ardnagrath NS, Walderstown Athlone

## STEAM IN-A-BOX (10-WEEK) PROGRAMMES:



## SCIENCE-IN-A-BOX

- **ORIGINS** - Nature of Science, Forces, & The History of the Universe
- **LIFE** - Explore Life on Earth: from Bacteria to Human Biology



## TECH-IN-A-BOX

Fun, thematic, creative and practical introduction to Technology



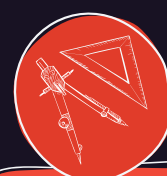
## ENGINEERING-IN-A-BOX

Innovative problem solving from bridges to energy, communications to biomedicine – there's an engineer for everything!



## ARTS-IN-A-BOX

The arts are in all our boxes! [We will also develop a bespoke Arts box just as soon as we can. Watch this space].



## MATHS-IN-A-BOX

Explore the language of the universe - the world in/of numbers

## STEAM-IN-A-BOX: HOW IT WORKS:

For full details on options, terms and conditions visit [www.steam-ed.ie/howitworks.html](http://www.steam-ed.ie/howitworks.html)

01



WE HELP YOU CHOOSE A PROGRAMME TO SUIT YOUR EMPLOYEES, AND A SCHOOL TO BENEFIT FROM YOUR SUPPORT



02



YOUR COMPANY PURCHASES A STEAM-IN-A-BOX PROGRAMME AND CAN OFFER YOUR STEM STAFF AN OPPORTUNITY TO VOLUNTEER.

03



WE TRAIN YOUR VOLUNTEERS TO WORK WITH THE TEACHERS AND KIDS. WE PROVIDE EVERYTHING YOU NEED – LESSONS, RESOURCES, SUPPORT SERVICES; AND WE CREATE POSITIVE PR OPPORTUNITIES FOR YOUR COMPANY AND SCHOOL.



04



YOU INSPIRE THE KIDS, CONTRIBUTE TO THE DEVELOPMENT OF THE FUTURE WORKFORCE, AND GIVE BACK TO YOUR COMMUNITY!



## OTHER SERVICES:

- Bespoke workshops for e.g. Science Week, Engineering Week, Maths Week, International Womens' Day
- Teacher & Whole-School Continuing Professional Development (CPD) Options
- Creative Digital Marketing & PR Services
- Coming Soon: STEAM Approaches to the Sustainable Development Goals including Climate Action!



# Get to know Education Ltd.

## ORIGINS

STEAM Education Ltd, led by Dr. Alice D'Arcy, is a Cork-based company, working out of University College Cork's Gateway Innovation Centre. STEAM Education began in 2006 as a fledgling hands-on science programme in a rural primary school outside Clonakilty, Co Cork. It was the brainchild of a parent-scientist, Seamus Devlin, who wanted to try teaching rocket science to children in fourth, fifth or sixth class aged 9–12 years. Each week, the scientist arrived with a box of science materials, tailor-made for children to take home or to use in the classroom.



## GROWTH

The programme was so well received that to build on the early success Seamus gathered a multidisciplinary team from backgrounds in industry, academia and youth education, who are passionate about STEAM subjects and wanted to address the serious gaps which exist in these areas of the education system. The aim was to inspire the next generation and bridge the shortfall of highly qualified STEM & Arts professionals who can think both critically and creatively.

STEAM Education registered as a company in 2014. Dr. Alice D'Arcy took over as Managing Director in 2015, and has grown the company to employ 6 staff, and support hundreds of primary schools around Ireland. STEAM has received invaluable support from Prof. John O'Halloran & Myriam Cronin in UCC, Seamus Devlin and Kevin O'Callaghan, Prof. Colette Murphy in TCD and Fiona Naughton and the Naughton Foundation.

The Naughton Foundation has been a long-term supporter, expanding their own mission of enhancing the study of science, technology, engineering, the arts, and maths at third level in Ireland, to intervening in the early stages of the creative development of young people and planting the seeds for a generation. This support has facilitated STEAM to develop and expand all over the country, engaging local industry and willing volunteer professionals, to deliver STEAM programmes to over 13,000 students.



## INSPIRATION

STEAM has to date worked with hundreds of STEAM professionals (through CSR programmes) to inspire children to love STEAM learning, and provided in-class Continuing Professional Development (CPD) experiences for hundreds of teachers. The 10-week courses deliver the concepts and theory, mixed with the practical application of the students' new knowledge which they can apply to interesting and relatable projects. The programmes intervene early, inspiring the kids towards a future career and giving them lifelong skills of brainstorming together to devise and negotiate solutions to their projects, learn from any mistakes and rectify their models or designs.

## EVOLUTION

Unfortunately, this year COVID-19 stalled the Spring programmes. However, all supporters are keen to return to school as soon as possible, in whatever form that may take. We would like to thank so many of our supporting companies, who redirected or redoubled their efforts to contribute to the national and global COVID-19 response, to help us all through this crisis. These are the real-life role models that we need to engage with our young people. Despite the challenges of the situation, and with all of our sympathies to the families of all those who died, we would like to focus on the positives, and consider what can we learn from the pandemic response and apply it to 'future proof' our society and our work-force.



## THE 'BIG 5' BENEFITS:

### 1. Corporate Social Responsibility (CSR)

The STEAM-in-a-Box programmes fit neatly into your CSR goals by using the expert skills of your employees, alongside teachers in primary school classrooms, for the combined benefit of your company and your community.

### 2. Early intervention enhances the industry's future

Early intervention in children's education is the key to strengthening the future of the industry and inspiring the next generation to engage in the available career opportunities.

### 3. Industry-Education links

Direct industry interventions in the classroom enhance an under-funded STEAM education system, inspiring class teachers to carry STEAM into their broader teaching. The industry also benefits from a network of engaged, brand-aware, future graduates and apprentices, by offering the children some real-world exposure to grown-up opportunities.

### 4. Continuing Professional Development (CPD)

STEAM programmes offer your staff the opportunity to volunteer in a primary school classroom to influence the next generation of STEM & Arts workers, while enhancing their own personal and professional growth, and that of the company.

### 5. PR

STEAM will work with you and the school in seeking local and national press coverage of the programme in operation, boost social media interaction with your business and in organising a certificate presentation ceremony.

**"** BAM Ireland have been involved with the STEAM Engineering-in-a-Box programme for a number of years. The way in which the children used the engineering principles that they learned in the classes to solve the tasks and practical projects that were set to them was brilliant. It was clear to see that every day I set foot in the class the children couldn't wait to begin the next project. Their enthusiasm was inspiring, and I hope I get to continue delivering the programme for years to come. I would recommend that all companies get involved as it an enjoyable and rewarding experience **"**

Colm Walsh Site Engineer, (& Engineering co-teacher)  
BAM Ireland

**"** I thoroughly enjoyed my teaching experience (with STEAM Engineering-in-a-Box). I would highly recommend my colleagues and other engineering companies to take part. I think it is a great idea which I hope goes from strength to strength. **"**

Thomas O'Connell, Communications/Business Development/Pre-Construction, Sisk





## JOIN THE STEAM COMMUNITY

SUPPORT A LOCAL PRIMARY SCHOOL WITH A STEAM-IN-A-BOX PROGRAMME THAT MATCHES YOUR EMPLOYEE SKILLS AND COMPANY CSR GOALS



## AND/OR

TRY A STEAM ONE-DAY DIGITAL OR PHYSICAL WORKSHOP WITH A PRIMARY SCHOOL FOR

- ▶ SCIENCE WEEK
- ▶ ENGINEERS WEEK
- ▶ MATHS WEEK
- ▶ BESPOKE EVENT

## INTERESTED COMPANIES AND/OR SCHOOLS

CONTACT: [info@steam-ed.ie](mailto:info@steam-ed.ie) to request a call back to discuss your specific requirements

or call

**Alice : 0876189837**

**Linda : 0868566999**

**David : 0876577918**



STEAM education are delighted to support ESB Science Blast, a non-competitive class lead programme for primary school classes that invites children to investigate the science behind a simple question that interests them. delivered by the rds in dublin, limerick and belfast the goal is to ignite children's innate curiosity about the world around them, and to promote curiosity, collaboration, creativity and critical thinking to enable them to better respond to the challenges of the future.

<http://www.esbscienceblast.com/>





**WE ARE DELIGHTED TO FEATURE ONE OF OUR SUPPORTING COMPANIES, GENUITY SCIENCE\* IN THIS FIRST EDITION. INTRODUCING SOME OF THE SCIENTISTS WHO HAVE INSPIRED LOCAL PRIMARY SCHOOL CHILDREN WITH STEAM & WHOSE 24/7 FIGHT AGAINST COVID-19 IS IMPACTING THE WHOLE COUNTRY!**

(\*FORMERLY GENOMICS MEDICINE IRELAND)

It's in our genes; the predilection towards flight or fight during times of turmoil or chaos. As quickly as our country shut down at the start of the COVID-19 outbreak, we had just as urgent a choice to make, as individuals, as families and businesses. With government subsidies, and employment protection taking some of the immediate pressure off those decisions, some businesses have come out fighting.

The decision to extend production and staffing hours to 7 days per week during this time of economic uncertainty flows strongly against the tide, but when your operations are key to government confidence and the well-being of our citizens, that fight becomes an epic battle. Genuity Science, formerly Genomics Medicine Ireland (GMI), were primely poised as a life sciences company leading large-scale, population-based medical studies in Ireland, analysing the relationship between genomics (studying the DNA contained in the cells of our body that acts as a blueprint for a human being), health and disease.

During this COVID-19 pandemic Genuity Science agreed with the HSE and the National Virus Reference Laboratory UCD and its partner labs (the primary testing centres for COVID-19) to formulate and deliver detection reagents for the production of up to 900,000 COVID-19 tests. Expanding their laboratory working days to 7 days a week, the work of Genuity Science has allowed the NVRL to ramp up COVID-19 testing to 10,000 tests per day, and complete in just 4 weeks what would have regularly taken 6 months. This diagnostic testing has been crucial to tracking the virus, early detection and treatment of patients with positive test results, and alleviating the concerns of vulnerable patients with suspected symptoms.





Dr. Karl Haslam and Dr. Eppie Jones from Genuity Science were co-teachers of the 10-week Science-in-a-Box Programme in St. Columbanus N.S. in Dublin, inspiring the next generation of STEAM professionals.

**Dr. Karl Haslam, Associate Director, Genomics Centre, Genuity Science.**

The daily work of Dr. Karl Haslam, an Associate Director with Genuity Science involves taking biological information from human DNA/RNA samples and digitising this for large-scale analysis. This facilitates genomic discoveries that will benefit human health.

Dr. Haslam claims that “a love of biology, the natural world and an inquisitive nature” had a big influence in leading him towards that line of study. “This later developed into a focus on human health, understanding disease and developing ways to find treatments and cures”.

**Dr. Eppie Jones, Bioinformatician, Genuity Science.**

In her daily work, Genuity Science Bioinformatician Dr. Eppie Jones analyses DNA from children who have an undiagnosed, rare condition in order to identify whether their disorder has a genetic basis. The discoveries can provide long-awaited answers for families and can help in shaping the child's care plan.

“A trip to the Science Museum in London when I was 12 let me see the possibilities of what you could do with science seemed so exciting and endless. My career to date has had lots of variety, from digging in caves, to examining DNA from people who lived thousands of years ago, to the medical research I am doing now”.

Interacting with the kids and listening to their often unexpected and interesting observations on the experiments we were doing in the classroom were some of the most rewarding aspects of the programme.

**STEAM Education collaborated with Genuity Science to bring the study of Genomics (perceived to be a more difficult science topic for younger age groups) into the classroom. As described by Dr. Alice D'Arcy, “New frontiers in Science need to be translated into accessible education. We are facilitating access for children and teachers to exciting fields of research, in fun, inspiring ways, with real life scientists”**





“The Sustainable Development Goals (SDGs) are an universal call to action to end poverty, protect the planet and improve the lives and prospects of everyone, everywhere. The 17 Goals were adopted by all UN Member States in 2015, as part of the 2030 Agenda for Sustainable Development which set out a 15-year plan to achieve the Goals”.

The achievement of these SDGs requires real governmental intervention, national and international collaboration, creativity and innovative mindsets and an underestimated requirement on each of us to embrace ‘active citizenship’, and to “Think Global, Act Local”.

Among the outputs of engaging with STEAM education - learning 21st century skills of creativity, an innovative mind-set, critical thinking, resilience, collaboration and problem-solving - are among the tools which will be required to achieve the targets of the Sustainable Development Goals. In our day-to-day work we actively pursue the goals of Quality Education for all [SDG4]; Gender Equality [SDG5]; Industry, Innovation and Infrastructure [SDG9]; & Partnerships for the Goals [SDG 17].

Time is increasingly a critical factor in the achievement of SDG targets and mitigation of climate change impacts - according to IPCC projections we now have about ten years to act to make a significant difference. In May 2019, the Dáil voted to declare a Climate and Biodiversity Emergency making Ireland the second country in the world to do so, while almost simultaneously Ireland was deemed the second worst-performing EU member state in tackling climate change.

Elements of many goals are interspersed through our science and engineering programmes and activities; however? we are actively seeking additional partnerships for STEAM approaches to SDGs.

“The decisions we make today are critical in ensuring a safe and sustainable world for everyone, both now and in the future”, said Debra Roberts, Co-Chair of IPCC Working Group II.



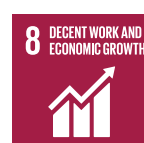
# #GLOBALGOALS

## SUSTAINABLE DEVELOPMENT GOALS

On 25 September 2015, countries adopted a set of goals to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years.

- Goal 1.** End poverty in all its forms everywhere
- Goal 2.** End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- Goal 3.** Ensure healthy lives and promote well-being for all at all ages
- Goal 4.** Ensure inclusive and equitable quality education and promote life-long learning opportunities for all
- Goal 5.** Achieve gender equality and empower all women and girls
- Goal 6.** Ensure availability and sustainable management of water and sanitation for all
- Goal 7.** Ensure access to affordable, reliable, sustainable and modern energy for all
- Goal 8.** Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- Goal 9.** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Goal 10.** Reduce inequality within and among countries
- Goal 11.** Make cities and human settlements inclusive, safe, resilient and sustainable
- Goal 12.** Ensure sustainable consumption and production patterns
- Goal 13.** Take urgent action to combat climate change and its impacts
- Goal 14.** Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- Goal 15.** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- Goal 16.** Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
- Goal 17.** Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

### 17 GOALS TO TRANSFORM OUR WORLD



For more info visit: [www.un.org/sustainabledevelopment](http://www.un.org/sustainabledevelopment)  
[www.unric.org/sdgs](http://www.unric.org/sdgs)

## ANNOUNCING AN EXCITING EDUCATION PARTNERSHIP FOR CLIMATE ACTION

Supported through the Public Service Innovation Fund by the Department of Public Expenditure and Reform



STEAM Education is delighted to announce our partnership with Clare Education Centre and Environmental Artist Evelyn Sorohan, through which we are collaboratively developing an innovative Climate Action for Primary Schools (CAPS) Programme. This project aims to design, develop, and pilot an innovative outreach programme for primary schools based on climate change and action, that harnesses the arts as a foundation for a STEAM learning process on this complex and challenging area. The programme will be piloted in a number of schools in Clare in Autumn 2020. The programme & associated Creative Climate Action Event are also supported by both Environmental Awareness Officer Karen Foley & Arts Officer Siobhan Mulcahy from Clare County Council.

## MEANWHILE HERE IN CORK...

We have partnered with our neighbours and Climate Action Research Experts from UCC's Environmental Research Institute & Environmental Artist Fiona Kelly... Watch this space!



"I am drawn to the slow making of the earth's surface, naturally evolved over aeons and the stark, rapid unmaking by our human interventions in the landscape. I collect waste materials to make with; such as old shipping crates and ply-wood, broken-down concrete, dust, tar and crushed glass to construct visual stories about ecology from these materials that were bound for the landfill. Through ongoing collaborations with key material innovators, historians and geologists, I investigate complex ecological systems that are seen as resources to be exploited and our responsibility for the world we are making."



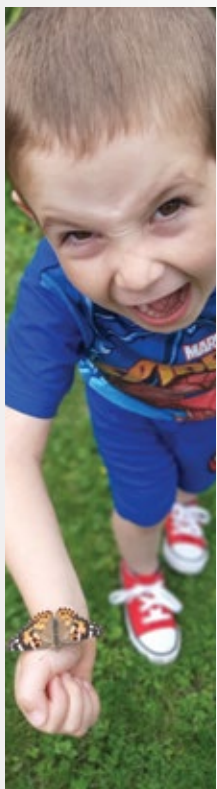
[www.fionakelly.co](http://www.fionakelly.co)



Fiona Kelly  
Evelyn Sorohan



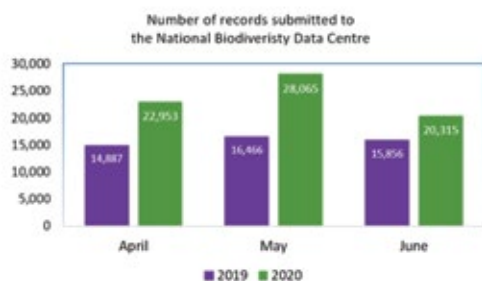




## HOW THE LOCKDOWN TRANSFORMED OUR ATTITUDES TO NATURE, & CITIZEN SCIENCE

A 2019 UN-backed report, found one million plant and animal species are now threatened with extinction and declining at rates unprecedented in human history. In Ireland, around one third of Ireland's 98 wild bee species are threatened with extinction, over 60% of the 202 species of commonly occurring birds in Ireland is now on the red and amber conservation lists.

Amazingly, the COVID-19 lockdown created an opportunity for wildlife and for wildflowers to bloom, which provided food resources for our pollinators, and both the designation of pollinator areas and limiting mowing has given wildflowers the opportunity to grow. Enquiries from the public to the **National Biodiversity Data Centre** almost doubled this year compared to 2019, along with an increase in the number of records submitted compared to the same time period last year, according to NDBC Officer Saorla Kavanagh: **"There has been a huge increase in interest in wildlife and recording activity seen throughout the country, It is wonderful to see that people are once again embracing biodiversity"**



**The Rare Green-winged Orchid** (*Anacamptis morio*) recently appeared on a grassy verge in a Portlaoise housing estate. Photo by Dr Fiona MacGowan



Saorla Kavanagh is Farmland Pollinator Officer for the National Biodiversity Data Centre, and former co-teacher of STEAM's **'Science-in-a-Box'** in **St. Josephs NS, Dun Laoghaire** (supported by the Naughton Foundation).



Butterflies pic credit to:  
Adam Vaughan, image by Sara Vaughan  
Eilidh Wilson, image by Dr. Mark Wilson



"The fact that we live at the bottom of a deep gravity well, on the surface of a gas covered planet going around a nuclear fireball 90 million miles away and think this to be normal is obviously some indication of how skewed our perspective tends to be."

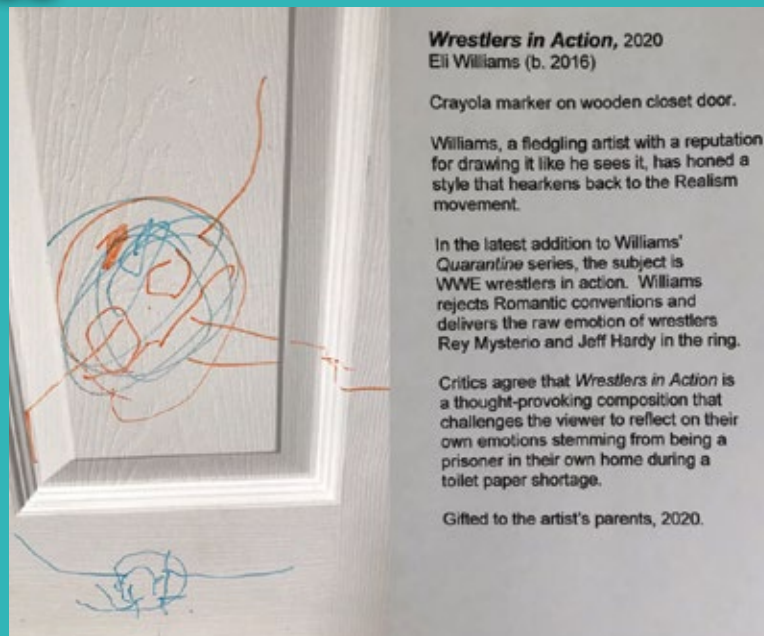


**Douglas Adams, *The Salmon of Doubt: Hitchhiking the Galaxy One Last Time***

# TRANSFORM

Perspective is an interesting concept. How we look at the world, informed by our biology and our life experiences, determines how we see it, or more importantly how we perceive it. In the arts world perspective is used as a technique to actively create illusions, of depth or distance or "reality".

Einstein is credited with referring to reality "as merely an illusion, although a very persistent one", a theory that has gained significant scientific ground as sub-atomic physicists engage with trying to understand the quantum weirdness of the universe. Meanwhile cognitive scientists, neuroscientists and psychologists push the boundaries of how we understand and construct the world around us, and question the very nature of truth, free will and "reality". It would increasingly seem that we are all engaged in a complex illusion, and if there is any certainty to be found in the idea of a single fixed reality it is surely that there is no such thing!



***Wrestlers in Action*, 2020**  
Eli Williams (b. 2016)

Crayola marker on wooden closet door.

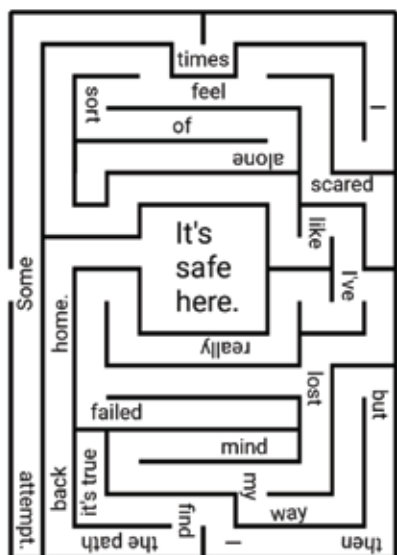
Williams, a fledgling artist with a reputation for drawing it like he sees it, has honed a style that hearkens back to the Realism movement.

In the latest addition to Williams' *Quarantine* series, the subject is WWE wrestlers in action. Williams rejects Romantic conventions and delivers the raw emotion of wrestlers Rey Mysterio and Jeff Hardy in the ring.

Critics agree that *Wrestlers in Action* is a thought-provoking composition that challenges the viewer to reflect on their own emotions stemming from being a prisoner in their own home during a toilet paper shortage.

Gifted to the artist's parents, 2020.

**Let's get ready to rumble!**



One of the greatest challenges we face, as a species in the midst of numerous global crises, is to change our perspective(s); to challenge what we know or think we believe or think we can do, both individually and collectively. We need to step out of the silo mentalities that can set in and look at the world and the challenges we face with fresh eyes, from different perspectives. And we need to educate our young people not just to do the same, but to do better.






[www.steam-ed.ie](http://www.steam-ed.ie)

№ 001

● Science   ● Tech   ● Engineering   ● Arts   ● Maths



## STEAM KIDS - Lockdown challenges

During May and June, the STEAM Lockdown Challenges gave our home-schooling STEAM Kids an opportunity to stay active with a variety of STEAM challenges.

Click the Lockdown Challenge link below for a look-back at our Facebook page at the challenges and the samples of work submitted by the kids.

<https://bit.ly/Lockdown-Samples>

## KIDS: Fighting the Coronavirus

Our STEAM Kids led the way in the fight against the Coronavirus; and here's the Science!



[www.youtube.com/watch?v=haCeeHlqSUY](https://www.youtube.com/watch?v=haCeeHlqSUY)

[www.steamh.eu](http://www.steamh.eu)



## Project

We are delighted to be participating in the 'STEAM-H' Erasmus+ project with partners in Italy, Spain and Germany. The 'STEAM-H' project aims at supporting teachers and educators to improve STEM learning experiences for students in primary schools, with a focus on inclusion using STEAM approaches.



Inspiring kids in STEM and Arts subjects  
Spéis sa teicneolaíocht, eolaíocht, ealaíona,  
innealtóireacht agus matamaitic



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