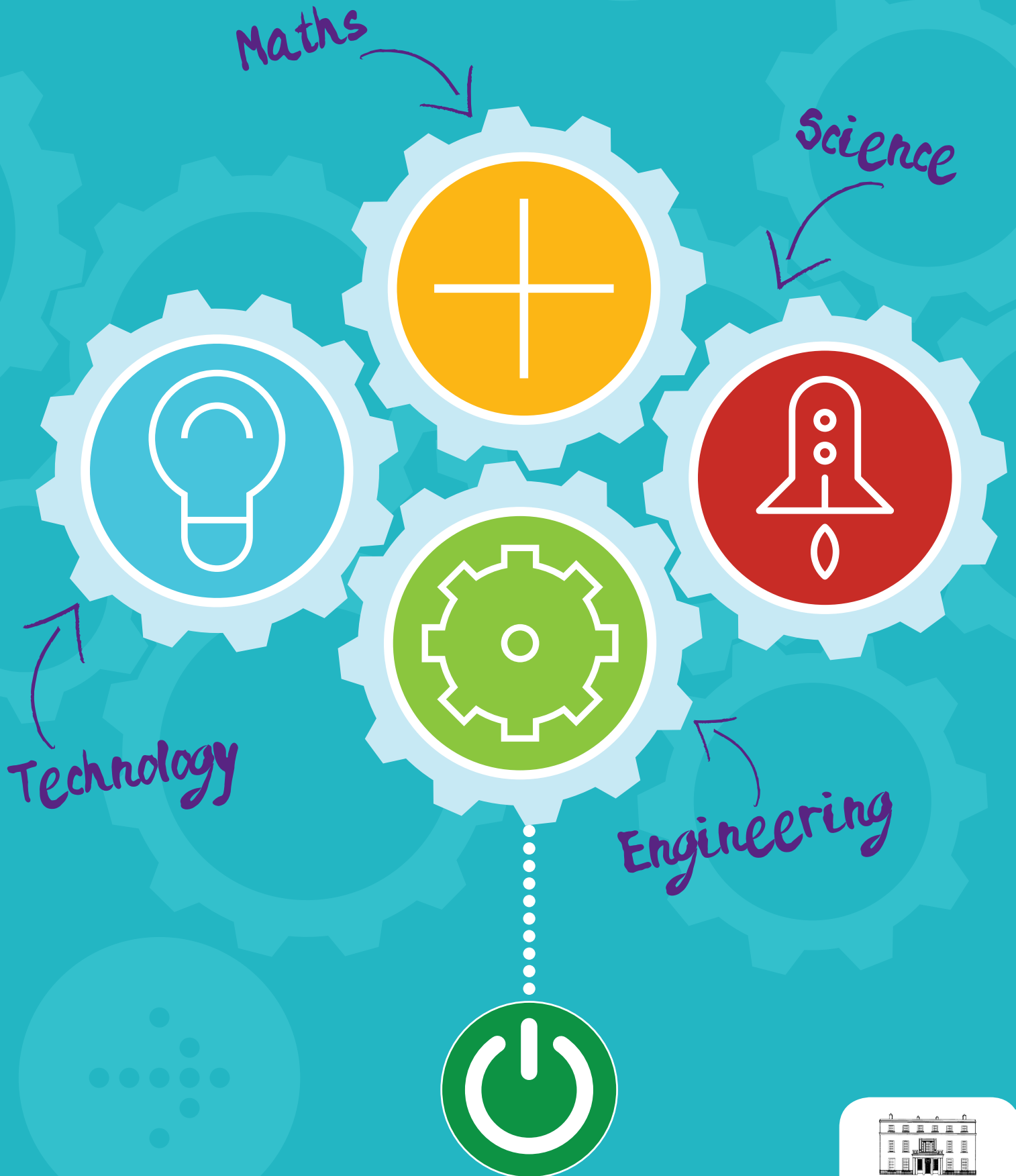


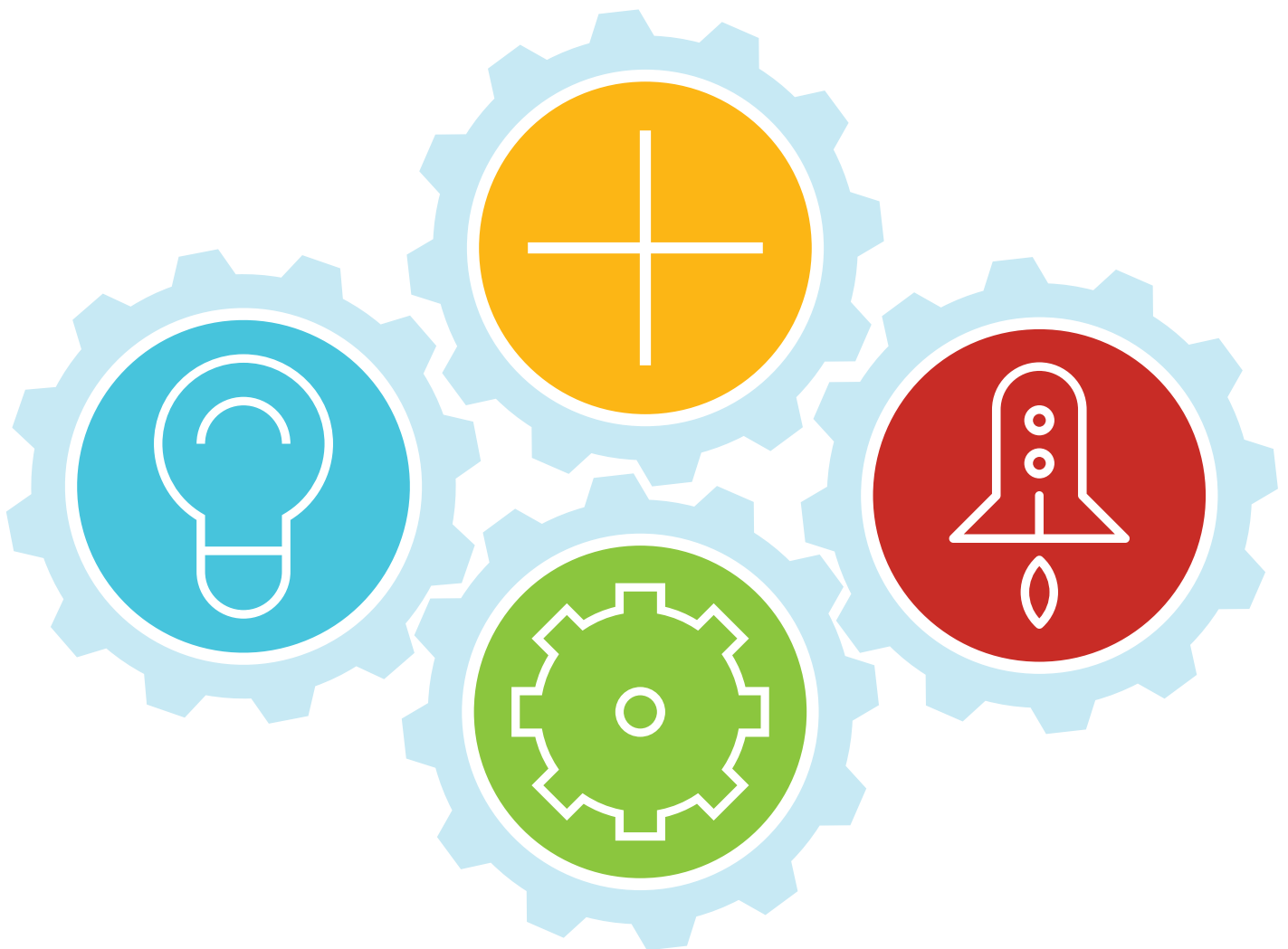
STEM Education

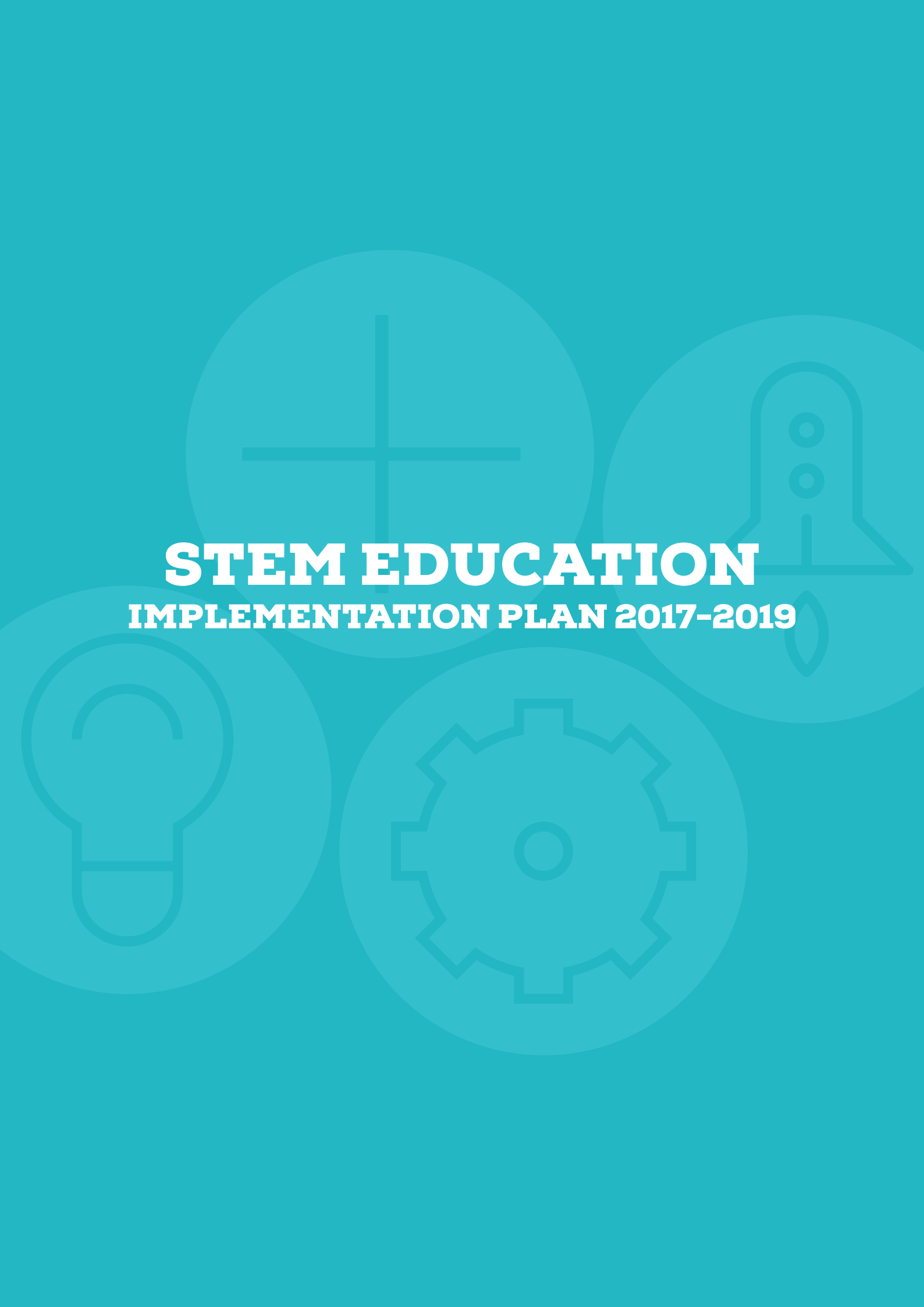
Implementation Plan 2017–2019



STEM EDUCATION POLICY STATEMENT

IMPLEMENTATION PLAN 2017-2019



The cover page features a teal background with several large, semi-transparent circular icons. These icons include a plus sign, a rocket ship, a lightbulb, and a gear. The text is centered in white, bold, uppercase letters.

STEM EDUCATION

IMPLEMENTATION PLAN 2017-2019



STEM EDUCATION IMPLEMENTATION PLAN 2017-2019

Introduction

Ireland aims to have the best education and training service in Europe within a decade. To realise this, we must provide the most effective and engaging teaching, learning and assessment environment for STEM education at all levels. The *STEM Education Policy Statement 2017-2026* (Policy Statement) sets out the ambitious objectives and high-level actions required to achieve and improve the STEM education experience and outcomes for all our learners.

Our vision for STEM education:

In line with our ambition to have the best education and training service in Europe by 2026, Ireland will be internationally recognised as providing the highest quality STEM education experience for learners that nurtures curiosity, inquiry, problem-solving, creativity, ethical behaviour, confidence, and persistence, along with the excitement of collaborative innovation.

This vision, to be realised through a programme of reform in our education system, is driven by a shared policy focused on better outcomes for all learners, raising standards of teaching, learning, assessment and school improvement.

There are many strengths in STEM education in Ireland, but a number of challenges also exist. These include the need to

- Ensure that Irish students' learning in STEM disciplines significantly improves including the development of skills such as problem-solving, inquiry-based learning and team working to address demands from the world of work
- Increase the number of students choosing STEM subjects in post-primary schools, those progressing to STEM pathways in Further or Higher Education and those who take up careers in STEM
- Increase participation of females in STEM education and careers
- Raise interest in, and awareness of the range of exciting careers in STEM
- Ensure young people sustain their involvement in STEM education

Providing a STEM education of the highest quality for all our young people will address these challenges and provide Ireland with the required graduates with STEM related skills and qualifications as well as the skilled workforce to fulfil existing and growing needs.

Achievement of our vision will require significant change within STEM education and a programme of work which will span from 2017 to 2026. Implementation will be realised across three phases

Phase 1: 2017-2019, Enhancing

Phase 2: 2020-2022, Embedding

Phase 3: 2023-2026, Realising

An Implementation Plan will be developed for each of the phases and will detail timelines and responsibilities in respect of each of the actions set out. The Department will establish a STEM Education Implementation Group to oversee the effective realisation of the objectives and actions. Each year the programme of actions will be reviewed by the STEM Education Implementation Group, the Department and its agencies to ensure that it is responsive to the changing environment. The Policy Statement contains challenging proposals which require committed reform across the education system. Effective realisation of the Policy Statement and Implementation Plan will depend on availability of resources.

It is important that as a Department we set indicators against which progress can be measured. The following are indicators of what success will look like over the lifetime of the Policy Statement

Indicators of Success

- All learners will have improved performance in STEM education
- Increased uptake of Leaving Certificate Chemistry, Physics, Technology and Engineering by 20%
- Increased uptake by females of STEM subjects by 40%
- Increased applications for STEM courses in CAO and retention in STEM courses
- All schools to incorporate STEM within their whole-school planning activities
- All schools, early years settings, learners and parents to have increased awareness and appreciation of the importance, value and opportunity in STEM with particular focus on females
- The gap in achievement in STEM disciplines between students in DEIS schools and students in all schools is significantly reduced
- A quality assured programme of STEM professional development provided to early years practitioners and teachers
- All schools will provide a better teaching, learning and assessment environment in STEM education
- All schools, learners and parents will have access to quality STEM career information and more opportunities to experience the diversity of STEM careers
- All learners will have access to co-curricular and out-of-school STEM learning opportunities with a 20% increase in extra-curricular STEM activities across schools
- Robust and sustainable partnerships in place between schools, business and industry, public sector bodies, research organisations, further and higher-level institutions, and the wider STEM community
- Partnerships in place with Arts education promoting creativity, universal design and design thinking skills
- A STEM awards programme in place to recognise student participation in informal and extra-curricular STEM activities and events



Phase 1: Implementation

Phase 1 of implementation will focus on establishing what is necessary to provide a quality STEM education experience. The programme of work to be implemented in Phase 1 (2017-2019) will include

- STEM curricular reform and access to excellent resources in order to ensure that students leave school with the required STEM skills
- Support for principals and teachers to incorporate STEM into their whole-school planning activities
- Support for schools and teachers to work together on innovative and collaborative initiatives in STEM as part of a programme to improve the STEM learning environment and to implement successful initiatives
- Scoping out the partnership with STEM business and industry and the education sector
- Support effective and engaging STEM teaching in all schools through a quality assured programme of professional learning for teachers and school leaders
- The Department's Inspectorate will continue to evolve models of inspection to support, build capacity and monitor the quality of STEM education from early-years to post-primary level
- Publish analyses of inspection outcomes in STEM in 2019 and at regular intervals thereafter
- Development of actions to promote and support increased participation in co-curricular and out-of-school STEM learning opportunities
- Establish stretch targets for STEM education based on analysis of the present baseline and the ambitions of the strategy
- Teachers and early years practitioners will use a cross-disciplinary approach in and across the four STEM disciplines
- Increase the opportunities for students to access quality information about STEM careers in partnership with the SFI Smart Futures programme, active involvement of HEIs, business and industry and guidance/STEM subject teachers
- Attract more specialist STEM graduates into the teaching profession

By recognising the role each stakeholder has to play, the actions in the Implementation Plan will bring greater cohesion to the diversity of STEM activity already taking place in our schools and communities. It will require committed support across the education system and stakeholders to create an eco-system which promotes STEM education and to achieve the stated programme of work.

IMPLEMENTATION PLAN 2017-2019

Implementation of the programme of work for Phase 1 spans the four pillars of policy development and action identified in the Policy Statement.

- Pillar 1. Nurture learner engagement and participation**
- Pillar 2. Enhance early years practitioner and teacher capacity**
- Pillar 3. Support STEM education practice**
- Pillar 4. Use evidence to support STEM education**

Pillar 1 - Nurture learner engagement and participation

Nurturing young people's STEM curiosity starts from early childhood and continues throughout their learning journey. Our education system has a responsibility to ensure that all learners are provided with a high-quality STEM education experience that creates a positive disposition towards STEM and enables them to participate, influence and succeed in a changing world.

We must ensure that learners have a positive engagement with STEM education, while also increasing the uptake of STEM related subjects for learners of all backgrounds, ability and gender. High-quality advice on the importance and relevance of STEM skills and information on the range and diversity of STEM related career opportunities is required for schools, learners and parents.

There is a need to engage in STEM awareness campaigns and the promotion of STEM careers through programmes such as Smart Futures¹.

The following high-level actions and sub-actions are designed to nurture learner engagement and participation in STEM education between 2017 and 2019

Number	High-Level Actions and Sub-Actions	Quarter	Delivered by
Pillar 1			
NURTURE LEARNER ENGAGEMENT AND PARTICIPATION			
Objective 1	Increasing participation of learners in STEM education.		
1.1	Increase uptake of STEM subjects for learners of all backgrounds, ability and gender.		
1.1.1	Conduct an audit of the uptake of STEM subjects, including uptake by females, identifying challenges and opportunities.	Q2 2018	DES, SFI
1.1.2	Report on the uptake of STEM subjects, including uptake by females, with recommendations for a coordinated response to include strategies such as pilot programmes.	Q4 2018	DES, SFI
1.1.3	Consider and commence implementation of the recommendations identified in 1.1.2 above.	Q1 2019	DES, SFI
1.1.4	Conduct an audit of current initiatives both within school and out-of-school to promote STEM subjects and STEM careers in partnership with SFI Smart Futures.	Q2 2018	DES, SFI
1.1.5	Undertake research on the key influencers on subject and career choice with SFI Smart Futures and engage business and industry, HEIs and others in developing initiatives to improve the availability of quality information and experiences.	Q4 2018	DES, SFI

¹ Smart Futures; www.smartfutures.ie



Number	High-Level Actions and Sub-Actions	Quarter	Delivered by
1.1.6	Conduct an audit to identify gaps in physical infrastructure which impact on the provision of STEM education in schools and early years settings.	Q4 2018	DES
1.1.7	Develop a systematic response in order to address gaps identified in 1.1.6 above.	Q4 2019	DES
1.1.8	Scope out potential means of improving the range of STEM subjects offered by post-primary schools.	Q4 2018	DES
Objective 2	Increasing awareness of STEM education.		
2.1	Undertake awareness programmes that promote STEM.		
2.1.1	Develop guidelines and engagement plan to promote the importance of STEM for early years settings, schools, parents and learners.	Q2 2019	DES, SFI, NCGE, NPC-P, NPC-PP, HEIs, IBEC, Students
2.1.2	Conduct an audit of attitudes to STEM among primary school pupils.	Q3 2019	DES, SFI
2.2	Enhance support for learners to make informed choices about STEM higher and further education and training options.		
2.2.1	Identify best practice for the provision of information on STEM higher and further education and training options in collaboration with SFI Smart Futures.	Q3 2018	SFI, DES, HEIs, NCGE

Pillar 2 - Enhance teacher and early years practitioner capacity

Improved teacher capacity is a key enabler in delivering STEM education of the highest quality for our learners. STEM education recognises the need for children from early childhood to have multiple and varied opportunities in STEM exploration and discovery. Teachers and early years practitioners require STEM subject matter knowledge, pedagogical content knowledge, appropriate skills and confidence. Enhanced preparation, development and support, through high-quality training, Initial Teacher Education, induction and ongoing professional learning is required. We must ensure that teachers, early years practitioners and leaders are provided with the necessary professional supports and opportunities to enable them to achieve this.

Increased learner uptake and development of new STEM related options in schools will require teachers to expand on existing STEM learning experiences. We must ensure that we have sufficient capacity within the teaching and early years profession to respond to current and future developments.

The following high-level actions and sub-actions are designed to enhance the STEM knowledge and practice of teachers and early years practitioners during their initial education and throughout their careers between 2017 and 2019. These supports are intended to enrich current and future classroom practices.

Number	High-Level Actions and Sub-Actions	Quarter	Delivered by	
Pillar 2				
ENHANCE TEACHER AND EARLY YEARS PRACTITIONER CAPACITY				
Objective 1	Enhancing the capacity and quality of teacher education to support STEM education in schools.			
1.1	Enhance the quality of Initial Teacher Education, induction and ongoing learning opportunities to support the development of STEM disciplines and pedagogical content knowledge.			
	1.1.1	The Teaching Council will take account of the <i>STEM Education Policy Statement</i> in (a) its review of the impact of the reconfigured ITE programmes and (b) its review of the criteria and guidelines for ITE programme providers.	Q4 2018	Teaching Council
	1.1.2	Collaborate with the National Forum for the Advancement of Teaching and Learning in Higher Education and with the Teaching Council to determine how best to embed STEM across Initial Teacher Education programmes.	Q2 2018	DES
1.2	Develop guidelines to facilitate STEM education in school placement in Initial Teacher Education.			
	1.2.1	Identify opportunities and commence development of guidelines in school placement and student mentoring.	Q2 2018	Teaching Council, HEIs, SFI
1.3	Facilitate effective partnerships between Initial Teacher Education, teachers' learning providers, STEM research and business and industry.			
	1.3.1	Explore the potential of STEM research placements in business and industry to enhance both the student ITE experience and STEM teacher learning/professional development.	Q2 2018	Teaching Council, HEIs, IBEC
Objective 2	Building early years practitioner and teacher capacity through continuous improvement.			
2.1	Ensure STEM education professional learning and mentoring is included in teacher induction.			
	2.1.1	Provide guidance and support to newly qualified teachers to embed STEM into teaching, learning and assessment.	Q4 2018 ongoing	DES, NIPT, Mentors & Professional Support Teams
2.2	Ensure the ongoing provision of teachers qualified to teach STEM specific subjects at post-primary.			
	2.2.1	Baseline data collection and analysis will be undertaken in conjunction with relevant bodies including schools, the Teaching Council, the HEA and the HEIs to inform policy on the supply of STEM teachers, as well as the current employment situations of Newly Qualified Teachers in STEM subjects.	Q1 2018	DES, Teaching Council, HEA, HEIs
	2.2.2	The Department will introduce measures to support the supply of STEM teachers, with focus on the immediate gaps in the availability in certain disciplines and having regard to the outcomes of sub-action 2.2.1 (above) and prioritising the immediate gaps identified in the availability of teachers of certain disciplines.	Q2 2018 ongoing	DES
2.3	Provide a variety of high-quality STEM related opportunities for early years practitioners and teachers to support their own professional learning.			
	2.3.1	Provide a quality assured programme of professional development support for STEM across the support services.	Q4 2017 ongoing	DES, Support Services, SFI
	2.3.2	Explore the development of a Framework for STEM professional development programmes and teaching and learning resources.	Q3 2018	DES, Support Services, NCCA



Number	High-Level Actions and Sub-Actions	Quarter	Delivered by
2.3.3	Develop and share quality assured exemplars of highly effective STEM learning experiences for all learners from early years to post-primary including good practice videos, case studies and sample portfolios.	Q1 2018 ongoing	DES, DCYA, NCSE, NCCA, Support Services
2.3.4	Review the professional development content and training resources of the National Síolta Aistear Initiative (NSAI) ² to enhance the capacity of early years professionals to support STEM education across early years settings	Q2 2018 ongoing	DES, DCYA, NCSE, NCCA, Early Years Support Services
2.4	Provide support to teachers in relation to implementation of STEM education curricular change.		
2.4.1	Develop and deliver programmes of professional development to support primary and post-primary curricular change in STEM areas.	Q4 2017 ongoing	DES, Support Services
2.5	Promote collaboration on STEM education within and between school settings.		
2.5.1	Provide advice and guidance to schools to facilitate teachers and schools working together to improve the quality of STEM teaching, learning and assessment e.g. Teacher Professional Networks, summer courses, twinning, cluster groups and online collaboration.	Q1 2019	NCCA, SEC, Support Services, SFI
2.6	Conduct an ongoing review of the standards and quality of STEM education professional learning.		
2.6.1	The development and implementation phases of Cosán ³ will have regard to the <i>STEM Education Policy Statement for Schools 2017 - 2026</i> .	Q4 2017	DES, Teaching Council

Pillar 3 - Support STEM education practice

There is a need to enrich teaching, learning and assessment from early years to post-primary to ensure that learners of all backgrounds, ability and gender are equipped with the skills needed to participate in our changing world. It is essential to place the needs of the learner at the core of teaching, learning and assessment to ensure a positive attitude to STEM education. Schools and early years settings must continually evolve, improve and learn from best practice in relation to STEM education.

We must embrace the changes required in our approach to STEM teaching, learning and assessment practices if we are to improve learning experiences and outcomes. We must enable learners to become active and reflective participants by providing a range of learning and formative assessment experiences that enhances their curiosity, inquiry, creativity and problem-solving abilities. In addition, there is also a need to provide out-of-school STEM learning opportunities to further deepen learners knowledge.

Effective leadership, at both early years and school level, is required to build a STEM culture and enhance the capacity of STEM education. Leaders must develop, support and review STEM teaching, learning and assessment practices and develop strong relationships with early years practitioners, teachers, learners, parents and the wider STEM community. Partnership with business, industry and the research community will also be important. Evaluation systems, both internal school self-evaluation and external, should promote highly effective practices so that STEM education is provided at the highest levels.

The following high-level actions and sub-actions, are designed to enhance STEM education practices in early years and schools between 2017 and 2019

² The National Síolta Aistear Initiative provides central support and coordination of Síolta and Aistear implementation across the early childhood sector.

³ Cosán; www.teachingcouncil.ie/en/Publications/Teacher-Education/Cosan-Framework-for-Teachers-Learning.pdf

Number	High-Level Actions and Sub-Actions	Quarter	Delivered by
Pillar 3			
SUPPORT STEM EDUCATION PRACTICE			
Objective 1	Enhancing STEM teaching, learning and assessment practices in early years settings and schools.		
1.1	Provide for ongoing STEM related curriculum review, development and assessment.		
1.1.1	Commence consultation on the new primary Mathematics curriculum, including elements relating to computational thinking, creative thinking skills and coding.	Q1 2018	NCCA
1.1.2	Commence a school-based initiative on coding in primary schools to explore approaches to integrating coding in the primary curriculum.	Q4 2017	NCCA
1.1.3	Finalise draft specification for Primary Mathematics (Junior Infants to Second Class).	Q3 2018	NCCA
1.1.4	Commence draft specification for Primary Mathematics (Third to Sixth Class).	Q3 2018	NCCA
1.1.5	Commence consultation on draft specification for Leaving Certificate Applied Mathematics.	Q4 2017	NCCA
1.1.6	Finalise draft specification for Leaving Certificate Computer Science.	Q4 2017	NCCA
1.1.7	Introduce Leaving Certificate Computer Science on a phased basis.	Q3 2018	DES, NCCA, PDST, SEC
1.1.8	Commence consultation on draft specification for Junior Certificate Technology subjects.	Q4 2017	DES, NCCA
1.1.9	Finalise draft specification for Junior Certificate Technology subjects.	Q3 2018	NCCA
1.1.10	Introduce new specification for Junior Certificate Technology subjects.	Q3 2019	DES, NCCA, PDST, SEC
1.1.11	Commence trialling of practical assessment component of Leaving Certificate Science (Biology, Chemistry, Physics) specifications.	Q4 2017	DES, NCCA, SEC
1.1.12	Commence consultation on draft specification for Leaving Certificate Art.	Q3 2018	NCCA
1.1.13	Finalise specification for Junior Certificate Mathematics.	Q4 2017	NCCA
1.1.14	Introduce the new Junior Cycle Mathematics specification.	Q3 2018	DES, NCCA, SEC
1.2	Provide access to high-quality curricular materials for STEM related subjects and courses.		
1.2.1	Engage with the NCCA on the development of a policy for the provision of curricular materials for teachers, in consultation with support services and other relevant parties.	Q2 2018	DES, NCCA, Support Services
1.3	Provide opportunities for all learners to participate in STEM education through informal, co-curricular and extra-curricular programmes.		
1.3.1	Commence identification of actions to promote and support increased participation in co-curricular and out of school STEM learning opportunities.	Q4 2017	DES, SFI, HEA, IBEC, HEIs
1.3.2	Encourage schools to include activities relating to informal and extra-curricular STEM activities and events under 'Other Areas of Learning' on the Junior Cycle Profile of Achievements.	Q4 2018	DES, JCT
1.3.3	Introduce an opportunity to showcase STEM achievements as part of Junior Cycle achievements.	Q4 2018	DES, JCT



Number	High-Level Actions and Sub-Actions	Quarter	Delivered by
1.3.4	Explore the feasibility of a STEM awards programme to recognise student participation in informal and extra-curricular STEM activities and events in schools.	Q3 2019	DES, SFI
1.4	Support early years and school leadership to enhance STEM education.		
1.4.1	Professional development to be provided for early years and school leaders to support STEM in schools.	Q4 2017 ongoing	DES, Support Services
1.4.2	Support principals and teachers to evaluate existing approaches through their school self-evaluation and to develop a school approach for STEM of which implementation will begin during this phase.	Q4 2018	DES, Support Services
1.5	Support the evaluation of STEM education at early years and school level.		
1.5.1	Expand the STEM evaluation and advisory capacity of the Inspectorate through the appointment of five additional inspectors with STEM expertise in early years, primary and post-primary sectors.	Q2 2018 ongoing	DES
1.5.2	Promote early engagement of learners with high-quality STEM learning experiences through inspection of early years pre-school settings in line with the <i>Early Years Education Inspection (EYEI) Framework</i> . ⁴	Q3 2018 ongoing	DES
1.5.3	Promote highly effective practice in teaching, learning and assessment through subject inspections in STEM subjects in line with <i>Looking at Our School 2016: The Quality Framework</i> ⁵ for Schools.	Q4 2017 ongoing	DES
1.5.4	Provide schools with advice on how STEM education can be incorporated into whole school planning and school self-evaluation in line with circulars 39/2016 ⁶ and 40/2016 ⁷	Q2 2018 ongoing	DES
1.5.5	Publish analyses of inspection outcomes in STEM and the position of STEM learning in Ireland in 2019 and at regular intervals thereafter.	Q4 2019 ongoing	DES
1.5.6	Continue to benchmark student achievement in STEM through participation in the international surveys such as PISA and TIMSS.	Q4 2017 ongoing	DES, ERC
Objective 2	Enhancing STEM teaching, learning and assessment practices using digital technology.		
2.1	Provide for digital technologies to support STEM education		
2.1.1	Develop guidance and protocols to support the establishment of a central repository of digital learning resources to support STEM teaching and learning.	Q4 2018	DES, Support Services
2.1.2	Commence delivery of webinars for teachers on a range of STEM related topics and evaluate their potential to contribute to teacher professional development.	Q4 2018	Support Services
Objective 3	Enhancing the link between STEM education and the Arts.		
3.1	Include provision for STEM education in the national research repository for Arts.		
3.1.1	Identify opportunities to incorporate STEM education in the national research repository for Arts.	Q4 2018	DES
3.2	Provide for STEM education linkages in Arts education partnerships.		
3.2.1	Identify opportunities for partnership between schools and the Arts.	Q1 2019	DES

⁴ <https://www.education.ie/en/Publications/Inspection-Reports-Publications/Evaluation-Reports-Guidelines/A-Guide-to-Early-years-Education-focused-Inspection-EYEI-in-Early-years-Settings-Participating-ECCE-Programme.pdf>

⁵ <https://www.education.ie/en/Publications/Inspection-Reports-Publications/Evaluation-Reports-Guidelines/Looking-at-Our-School-2016-A-Quality-Framework-for-Post-Primary-schools.pdf> and <https://www.education.ie/en/Publications/Inspection-Reports-Publications/Evaluation-Reports-Guidelines/Looking-at-Our-School-2016-A-Quality-Framework-for-Primary-Schools.pdf>

⁶ https://www.education.ie/en/Circulars-and-Forms/Active-Circulars/cl0039_2016.pdf

⁷ https://www.education.ie/en/Circulars-and-Forms/Active-Circulars/cl0040_2016.pdf

Number	High-Level Actions and Sub-Actions	Quarter	Delivered by
3.2.2	Identify opportunities for partnerships between Better Start ⁸ , Creative Ireland ⁹ and other relevant organisations in order to promote STEM education and practice across the early years sector.	Q4 2018	DES
Objective 4	Enhancing partnership between schools and business and industry and the research community		
4.1	Provide supports for schools to establish links with business and industry, HEIs and the research community more broadly.		
4.1.1	Develop guidelines for partnerships with industry, cultural and educational bodies to adapt relevant content into useful STEM learning and teaching digital resources for schools.	Q1 2018 ongoing	DES, PDST-TIE, JCT, SFI, DBEI
4.1.2	Scope out the STEM partnership with the initial focus on a common vision and approach for supporting STEM education across business and industry and the education sector.	Q2 2018	DES, DBEI, SFI
4.1.3	Undertake an audit of successful partnerships between schools and business and industry.	Q4 2019	DES, DBEI, SFI
4.1.4	Scope out the potential for 'open weeks' for STEM in HEIs in partnership with SFI Smart Futures.	Q2 2018	DES, HEI, SFI
4.1.5	Provide guidelines for the development of school STEM fora (operated by business and industry).	Q2 2019	DES, Support Services, DBEI
4.1.6	Support cluster innovation in STEM involving outside partners.	Q4 2018	DES, Support Services
4.1.7	Develop guidelines for the establishment of STEM ambassadors and mentors to work with schools.	Q2 2019	DES
4.1.8	Scope out potential for Transition Year STEM related programmes to be operated by business and industry.	Q2 2019	DES, DBEI, NCCA

Pillar 4 - Use evidence to support STEM education

Building and sustaining a vibrant STEM education eco-system for all learners will require ongoing innovation in STEM education. Such innovation should be underpinned by evidence generated through STEM research which can identify successful pedagogical strategies, inform school practice and contribute to the ongoing development of curriculum, policy and teacher education. Building on the already active STEM education research community in Ireland, a new STEM education research model would provide for engagement in funded research with collaboration across all levels of education.

The adoption of an evidence-led approach to STEM education will assist the Department in implementing and informing future policy decisions. Identification of STEM baseline data will underpin this. It will also involve monitoring the impact of programmes and initiatives, both formal and non-formal, to improve STEM outcomes across our education system.

The following high-level actions and sub-actions are designed to build a research base, facilitate the use of evidence to support STEM education, and create a culture of innovation in STEM teaching, learning and assessment between 2017 and 2019

⁸ <https://www.pobal.ie/BetterStart/Pages/Home.aspx>

⁹ <https://creative.ireland.ie/en>



Number	High-Level Actions and Sub-Actions	Quarter	Delivered by
Pillar 4			
USE EVIDENCE TO SUPPORT STEM EDUCATION			
Objective 1	Using evidence to support STEM education.		
1.1	Develop a model to support the STEM education research community in Ireland.		
1.1.1	Engage with Science Foundation Ireland, Third Level and STEM Research Institutes to establish the breath and landscape of existing research areas in STEM teaching and learning and identify the needs around national collaboration.	Q3 2018	DES, SFI
1.1.2	Engage with Science Foundation Ireland to explore the most appropriate models of supporting STEM Education Research at a national level.	Q2 2019	DES, SFI
1.2	Support evidence-based research to inform STEM education provision, curriculum, pedagogy, professional learning and future policy development.		
1.2.1	Engage with STEM Research Institutes and the HEIs to explore the collaboration opportunities to ensure evidence-based STEM education research can be supported and promoted to schools including the CROÍ Research Series (Collaboration and Research for Ongoing Innovation). ¹⁰	Q4 2019	DES, Teaching Council, HEIs
1.3	Identify and provide annual STEM data indicators on participation, attainment, attitudes to STEM, graduate outcomes and STEM related skills needs.		
1.3.1	Establish baseline STEM data on participation, attainment, attitudes to STEM, graduate outcomes and STEM related skills needs.	Q1 2018 onwards	DES, HEIs, ERC
1.3.2	Use baseline data to set informed targets and establish processes for ongoing analysis and review.	Q3 2018 onwards	DES, ERC
1.4	Develop innovative responses to skills gaps to meet national and regional STEM related skills needs.		
1.4.1	Engage with the National Skills Council to identify national and regional STEM related skills needs.	Q1 2018 onwards	DES, NSC
1.4.2	Develop innovative responses to existing and emerging skills gaps to meet national and regional STEM related skills needs.	Q3 2018 onwards	DES, NSC
1.5	Explore the provision of bonus points in STEM-related Higher Level Leaving Certificate subjects (in cases where students apply for higher education courses in STEM-related areas) by the HEI's in consultation with the Transitions Reform Steering Group.		
1.5.1	Update on consideration by HEIs on the provision of bonus points in STEM-related higher-level Leaving Certificate subjects.	Q4 2019	DES, HEIs

¹⁰ <http://www.teachingcouncil.ie/en/Research/Croi-Collaboration-and-Research-for-Ongoing-Innovation/>

Appendix 1: Abbreviations

CAO	Central Applications Office
DBEI	Department of Business, Enterprise and Innovation
DCYA	Department of Children and Youth Affairs
DEIS	Delivering Equality of Opportunities in Schools
DES	Department of Education and Skills
ERC	Educational Research Centre
HEA	Higher Education Authority
HEI	Higher Education Institution
IBEC	Irish Business and Employers Confederation
ITE	Initial Teacher Education
JCT	Junior Cycle for Teachers Support Service
NCCA	National Council for Curriculum and Assessment
NCGE	National Council for Guidance in Education
NCSE	National Council for Special Education
NIPT	National Induction Programme for Teachers
NPC	National Parents Council
NPC-P	National Parents Council - Primary
NPC-PP	National Parents Council - Post Primary
NSC	National Skills Council
PDST	Professional Development Service for Teachers
PDST-TIE	Professional Development Service for Teachers - Technology in Education
PISA	Programme for International Student Assessment
SEC	State Examinations Commission
SFI	Science Foundation Ireland
STEM	Science, Technology, Engineering and Maths
TIMSS	Trends in International Mathematics and Science Study

