FROM THE MINISTER/ÓN AIRE

Department of
Education

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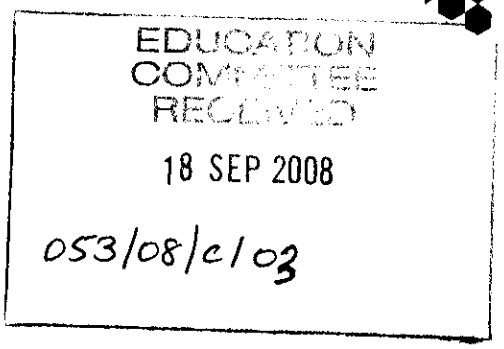

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11 September 2008

A mervyn a chara,

Thank you for your letter of 13 August 2008.

As you are aware, the Department of Education (DE) has undertaken a review of STEM led by a Steering Group chaired by Dr Hugh Cormican, former founder and Chief Executive of Andor Technologies Ltd. The Steering Group comprises representatives from business, government and academia. Reporting to the Steering Group are three working groups which each take forward a key strand of the review: a Government Led Working Group; an Education and Training Inspectorate Led Working Group; and a Business Led Working Group. The review of STEM is designed to produce a strategy for the development of STEM through schools and further education (FE), identifying progression routes to higher education (HE) and employment and emphasising the links to the skills and innovation needs of the wider economy. DE has yet to receive the final STEM report and as such cannot substantively comment on its recommendations. However, early indications are that DE is already embarked on a number of fronts which may ultimately address in whole or in part some of the recommendations expected to come out of the Review. These are summarised in the following paragraphs.

Revised Curriculum

The curriculum and schools will be required to provide access to a wider range of general and applied courses to best fit pupil needs. This will include traditional science and technology courses as well as the new applied courses that are being developed in areas such as applied sciences, applied Information Communication Technology (ICT), manufacturing and engineering. The revised science requirements should prove more engaging and relevant for young people and encourage them to continue to study science related subjects. At Key Stage 4, schools are required to offer at least one science course.

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Developing young people for the economy is a key objective of the revised curriculum across all areas of learning. The revised curriculum takes into account what employers told Government they needed from prospective employees coming out of the education system, with a specific focus on giving young people the skills and knowledge required to adapt and succeed in a rapidly changing world. Pupils have better opportunities through the cross-curricular skills of Communication, Using Mathematics and Using ICT and the Thinking Skills and Personal Capabilities framework to develop the skills they need to be effective as future employees, employers and entrepreneurs.

The Revised Curriculum provides the opportunity for schools to engage learners from an early age, and open up relevant and exciting career opportunities available to them through STEM subjects. Schools, employer bodies and the Council for Curriculum, Examinations and Assessment (CCEA) are developing partnerships that promote a sound basis for addressing economic priorities through joined-up programmes. Pupils will be able to see clear links between the STEM subjects and opportunities here in education and the economy.

The Revised Curriculum provides close links between the curriculum and the development of skills and capabilities necessary for life and work. The Revised Curriculum:

- helps young people develop as individuals and members of society;
- delivers the skills and capabilities needed for adult life and work;
- helps them cope with the changing global economy; and
- helps them learn how to make informed choices.

Therefore the Learning for Life and Work area is compulsory at Key Stage 3 and 4. Within this, the specific strand of Employability is designed to focus on ensuring that all young people develop the personal qualities, skills, knowledge, understanding and attitudes which will give them a strong foundation for lifelong learning and work.

The CCEA develops resources taking account of Departmental policy priorities. "Out of This World", a STEM-related primary learning unit, uses the context of Outer Space and the Construction Industry to set pupils the challenge of designing and making a 3D model of an environmentally friendly space hotel. The Thinking Skills and Personal Capabilities framework underpin the learning experiences for pupils in this unit, connecting science and technology with The World Around Us. Teachers can also choose to teach employability and financial capability concepts with this.

"The WOW Factor" (World of Work), a STEM-related post-primary learning unit provides pupils with the opportunity to explore innovation and technology, careers within the Science and Research field, and the importance of the transferable skills for work.

The Rolls-Royce Science Prize is an annual awards programme created in order to:

- build and develop strong and lasting partnerships between schools and industry;
- encourage excellence and enterprise in teaching; and
- add value to the perception of Science in schools.

It is open to all teachers of science from all schools and colleges in England, Scotland, Wales and Ireland. Teachers can enter in three age categories: 3–11, 11–16 and 16–19 and submit an idea for a science-teaching project that meets a need in their school or college.

St Anne's Primary School, Derry, won the 3-11 category in 2007/08. The team will spend a day with the Red Arrows and received a cheque for £15,000 for their project "Investigating Water", in which students explored the water cycle and analysed the quality and treatment of water in their local community. The project culminated in pupils developing a water filtration system for a local farm.

Entitlement Framework

DE and the Department for Employment and Learning (DEL) are working to ensure they co-ordinate the programme of provision for 14-19 year olds. The work includes consideration of the curriculum, qualifications, careers advice, planning, funding and their relevance to the needs of the economy. Within DE, a major focus in the development of the 14-19 provision is the Entitlement Framework.

Raising educational standards and ensuring young people have the necessary skills and qualifications to progress into employment are crucial for the long-term economic success of the north of Ireland. The Entitlement Framework will guarantee all post-primary pupils aged 14 and above greater choice and flexibility by providing them with access to a wide range of learning opportunities suited to their needs, aptitudes and interests, irrespective of where they live or the school they attend. This includes greater access to applied/vocational/professional/ technical courses.

The future development of the Entitlement Framework will place an emphasis on area planning of provision and funded Entitlement Framework Development Officers are currently working with schools to assist the 31 Learning Communities which have been establish across the north. The Department will be working closely with the Entitlement Framework Development Officers Regional Forum, ETI and others over the coming months to ensure that the Entitlement Framework and STEM agendas are advanced in a co-ordinated way. This will include raising awareness of STEM options for all learners and providing pathways for all our pupils to allow progression to employment.

Specialist Schools

DE recognises the potential that specialist schools could have in the promotion of STEM subjects and wishes to encourage this. DE, working with the Department of Enterprise, Trade and Investment, has secured resources within the Innovation Fund to support the STEM agenda through the Specialist Schools programme.

One of the programme's key aims is to develop links between schools, their local communities and the economy to ensure that all young people are given a strong foundation for lifelong learning and work.

The third cohort of the Specialist Schools programme was launched in March 2008 and following a rigorous assessment process, DE identified three schools with STEM related subjects. These schools will be officially designated as specialist schools from September 2008, bringing the total number of schools with STEM specialisms to 11.

All schools from the three cohorts designated under the STEM specialisms will be invited to submit a bid for support for a project designed to increase the uptake of STEM subjects, bring together STEM specialist schools to act collegially to improve practice, raise standards and enhance the facilities available for STEM teaching in their areas. Details of this application process will be announced early in the autumn term.

School Improvement

Society is changing rapidly and the challenges facing the local economy are growing substantially. For the local economy to flourish the workforce needs skills that will help it to compete internationally and to make best use of emerging technologies. It is increasingly important therefore that there is a literate and numerate population capable of taking advantage of opportunities in science and technology and in the financial and business worlds. To this end DE is bringing forward the following two complementary policies:

- 'Every School a Good School' – A Policy for School Improvement; and
- Literacy and Numeracy Strategy.

The overall aim of 'Every School a Good School' is that every child will leave compulsory education equipped for adulthood and with the appropriate standards of literacy and numeracy. The key underpinning argument behind the policy is that improvement and raising achievement is, above all, the responsibility of the school. The focus will be on self-evaluation leading to sustained self improvement, combined with a formal improvement process for those schools where progress is not what it should be (this will be determined by the findings of inspection).

The clear expectation is that all parties involved - DE; the education support agencies; Boards of Governors and staff - will maintain an unwavering focus on quality and standards. Education and Skills Authority will have a programme of support and advice to help schools raise performance but, in order for it to be a sustained improvement, change must come from within the school.

The revised Literacy and Numeracy Strategy aims to ensure that every child leaves compulsory education with the appropriate standards of literacy and numeracy. It will seek to build on progress already made by according the highest priority across the whole education system to improving standards of literacy and numeracy. The Strategy issued for consultation on 23 June 2008 and the consultation will straddle the summer holidays with a closing date of 30 November 2008 to ensure those in schools get at an ample opportunity to feed their views into the process.

The focus of the strategy is on raising standards and aspirations for boys and girls in literacy and numeracy. Underachievement among boys, particularly in disadvantaged areas, is a challenge but is also a real concern for girls, as they will go on to face so many other barriers in their adult life. In addition to 'raising the bar', the strategy also focuses on 'closing the gap', in particular between those most and least disadvantaged and between the highest performing and lowest performing pupils and schools, after 12 years of compulsory education.

The strategy is informed by evidence and good practice at local, national and international level. Research in the South[1] has highlighted the adverse impact of socio-economic disadvantage on attainment in literacy and numeracy and the importance of effective monitoring, evaluation and target-setting by schools in raising standards in literacy and numeracy. The recently published Williams report, 'Independent Review of Mathematics Teaching in Early Years Settings and Primary School', noted that Britain remains one of the few advanced nations where it is socially acceptable - even fashionable - to profess an inability to cope with mathematics. In promoting the importance of mathematics, the revised literacy and numeracy strategy aims to ensure that pupils are not inadvertently given a sense that mathematics is difficult and obscure. The revised strategy aims to promote positive attitudes to literacy and numeracy and rigorously address under-achievement. Educational underachievement is also an issued being addressed through the North/South Ministerial Council in Education Sectoral Format.

ICT in Schools

DE is currently reviewing its 'Empowering Schools' strategy. The aim of the review is to consider how we can further embed ICT in teaching and learning right across the curriculum. Since 2000, substantial funding has been invested in ICT in schools and the review provides an opportunity for DE, working with our education partners, to focus on clear targets that allow us to assess how this significant investment can be linked to successful educational outcomes.

Increasing numbers of pupils are taking specialist ICT courses at GCSE and post-16 level which provide a sound foundation for progression into careers using ICT. Since 2002, the numbers taking GCSE ICT have more than doubled; over the same period, enrolments for AS and A2 ICT courses have almost quadrupled. An intended outcome of the ICT strategic review is to improve the training of the education sector workforce to deliver ICT skills across the curriculum.

DE is also collaborating with DEL to implement their ICT Future Skills Action Plan. The action plan aims to address the immediate skills needs of the ICT sector in the north of Ireland and DE will be engaged in supporting those aspects that impact on schools, such as the 'career attractiveness campaign'.

Careers Education

In February 2006, the "Success Through Skills" strategy was launched, setting out an ambitious vision for skills in the north of Ireland. In parallel, DE and DEL committed to supporting this theme by developing an independent all-age Careers Education, Information, Advice and Guidance Strategy.

The Department's objectives in implementing the Strategy are:

- ensure that work on careers education is rooted in the revised curriculum and the entitlement framework and is designed to support DE's commitment to tackling underachievement and improving equality of opportunity;
- enable our young people to develop the skills to be able to make informed decisions about their education, training and employment options;

[1] *Reading Literacy in Disadvantaged Primary Schools*, Educational Research Centre, 2004

- provide young people with opportunities and experiences to develop the essential employability and life skills to become effective citizens and employers/ entrepreneurs/employees; and
- set in place a framework to ensure that young people in schools have access to good quality Careers Education, Information, Advice and Guidance so that they can make informed choices and achieve their full potential.

Aligning the promotion of STEM with Careers Education, Information, Advice and Guidance Strategy presents an opportunity to implement an effective and cohesive action plan in post-primary schools to raise STEM awareness, in particular at Key Stage 3, of the opportunities and pathways in partnership with the world of work. Key issues would be:

- to raise awareness of STEM to all learners;
- clarification of potential STEM pathways and qualifications required;
- to identify STEM opportunities at local and regional levels; and
- to identify and mobilise local business support infrastructure.

As a pilot initiative, it is proposed to facilitate an additional seconded teacher in each Board area, aligned within existing Learning Communities. This will build on the established role of the Curriculum Advisory Support Service (CASS) in supporting mathematics, science and design and technology in all schools. This would also align with CASS's role in supporting the Entitlement Framework through Area Learning Communities and their focus on the Careers Education, Information, Advice and Guidance Strategy, and STEM initiatives and deliverables through the E2S Development Officers.

Promotion of STEM Work in Schools through Competitions and Exhibitions

Through the STEM Innovation Fund, DE will be contributing to the funding of the BT Young Scientist Exhibition, the Irish Senior Science Olympiads, and to the cost of NASA space crew presentations to Specialist STEM schools in September 2008.

Increasing the Supply of Appropriately Qualified STEM Teachers

Since 2004/05, DE has been encouraging the teacher training providers here to have regard to the composition of their total approved intake figures when making allocations to identified shortage subjects, including mathematics and science. DE also approved two new post-primary pathways, mathematics and science, in the post-primary options offered on the BEd courses at Stranmillis and St Mary's University Colleges with effect from 2006/07. For the 2008/09 academic year, 10 additional places for these BEd pathways were allocated to each College.

STEM Professional Development

Plans are afoot for the Regional Training Unit to manage the delivery of a programme of professional development in STEM (Building Leadership Capacity) in conjunction with the National Science Learning Centre and the National Centre for Excellence in the Teaching of Mathematics.

Education and the Economy

DE recognises that an important part of developing a successful and growing economy is to ensure that the worlds of business and education are connected. Recent developments within DE, such as the curriculum changes on Education for Employability, the Careers Education, Information, Advice and Guidance Strategy and the promotion of specialist science schools have the potential to develop the wealth-creation skills required by our future workforce.

The Department also recognises the critical role which business has to play and local companies have demonstrated a willingness to play their part by helping learners to increase their individual skills and careers choices by participating in a wide range of STEM activities with schools; these include:

- providing work related learning for learners and teachers in STEM related subjects;
- bringing their knowledge of STEM careers to the classroom;
- supporting 'real life' projects;
- mentoring teachers and learners;
- helping with mock interview days;
- supporting careers conventions;
- arranging workplace visits; and
- promoting STEM.

I trust you will see that DE is addressing the needs of the STEM sector as a whole through the many STEM related programmes I have detailed above.

Is mine,

Caitríona Ruane

CAITRÍONA RUANE MLA