

Speech to The Foundation for Science and Technology - 25 May 2005

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Thank you for inviting me to speak at the Foundation for Science and Technology this evening.

I'd like to start by sketching out the Government's vision for secondary education. I will focus on our response to Mike Tomlinson's report which we set out in the 14-19 White Paper we published in February. The White Paper sets out the Government's response to the challenge of fulfilling the needs and aspirations of every young person.

We are, of course, very aware that there has been criticism that the Government has not fully embraced the recommendations of the Tomlinson report. We have decided to retain the existing GCSE, and A-level qualifications system, rather than adopting the over arching diploma for both vocational and academic routes. It is important to build upon what is good within the current education system rather than replace it wholesale. Won't create opps throw out what works GCSE and A Levels are high quality qualifications and internationally recognised. Perhaps most importantly they are also universally understood by young people, parents, employers and Universities alike. We consider the real challenge to be bringing the same levels of quality, coherence and understanding to what has been described as the alphabet soup of vocational qualifications.

There has been long standing criticism, concerning the traditional vocational and academic disparity that will, it is argued, grow even bigger with the White Paper reforms. But, we believe that the development of the Diploma is a real opportunity to break down the academic and vocational divide. We must also accept that this requires a fundamental step change in cultural attitudes, which by its nature will take time, and can only be done if everyone fully supports and recognises these qualifications.

Apart from retaining GCSEs and A Levels, we have in fact used the Working Group's analysis of the system and adopted many of its major recommendations.

The reforms are based around some key principles that I think you will agree, set out in broad terms, the key issues that need to be addressed. These principles are:

- securing the basics
- stretching every young person to their full potential
- offering a high-quality vocational route
- re-motivating disengaged learners
- and preparing all young people for the world of work

So what do these broad principles mean in practice?

Firstly, **securing the basics**. Employers have raised a number of consistent concerns about the skills of young people. These concerns have focused predominantly on communication and maths skills but also include wider skills such as team working. I'm sure we all have anecdotes about young people with excellent qualifications but unable to deal with a simple telephone complaint or write a decent letter. I know I have. That is why we will ensure that every young person must leave school competent in English and mathematics. We intend to define what it means to be functional in English, maths and ICT. To ensure that the curriculum imparts these skills and that qualifications judge their mastery. It will not be possible to achieve a grade C or above at GCSE, without having mastered the basics. We think this is so important that we will also change the way that we measure success in schools. The achievement and attainment tables will recording the number of pupils achieving 5 good GCSEs including English and mathematics.

Next is **Stretch and challenge**. It is vital that we provide real opportunities, for young people to realise their full potential. Some students need a greater degree of stretch and challenge in their studies. The new diploma and A-

levels, will offer gifted students the option to answer more challenging questions. We intend to pilot an extended project at advanced level to test a wider range of higher-level skills. And we will allow schools to offer Higher Education modules, where the pupils are ready for this level of study.

In many ways our top priority, is to secure **stronger vocational pathways** for young people. The traditional route of academic qualifications, such as A levels and GCSEs, have served the needs of many students very successfully. However there are a number of students who have different needs, and learning styles, that would benefit from a greater variety of teaching and learning approaches. There are also a number of young people who would benefit from more practical applications of learning.

For these young people there will be 14 Diplomas covering the main occupational sectors. We are working in close collaboration with a number of key stakeholders, including employers and Sector Skills Councils to ensure that the Diplomas will have suitable content. There will then be a phased delivery of Diplomas, with the first four in ICT, engineering, health and social care, and the creative and media industries to be introduced in 2008. The next 4 Diplomas will be introduced in 2010, and all 14 will be available by 2015. We believe that this will tackle the issue of too many young people undertaking poor quality training, which then leads to narrow qualifications which are not widely recognised in the labour market or by Universities.

The fourth priority on the list is the **Re-engagement** of young people who drop out of the system. Young people, who are engaged in the education system post 16, and achieve good results are more likely to have better life chances than those who do not. Not just about earning power a very simple proposition I am sure you will all agree. It is a real issue with serious social consequences. The proposals in the White Paper, will allow students to have access to a much wider range of environments, and types of learning. The new package of qualifications, and other changes to the system, will result in a clearer framework of progression pathways so that through to the age of 19

and beyond students will have real choice and options available to them. Hence ensuring that we are putting in place a framework to ensure that all **young people will be prepared for the world of work.**

So is this enough? Will this deliver the change that is needed within the system? I look forward to debating this over dinner.

Now I'd like to consider the implications for science. It is interesting to note that Mike's report was fairly silent on the issue of science, and that contrasts clearly with the White Paper where it is given prominence throughout.

Our first priority is to ensure that young people have secured basics are able to make the best choices from an informed position at the age of 14, the importance we have placed at reforming the curriculum for 11-14 year olds, which is Key Stage 3. Key Stage 3 has the broadest scope, with regards to the compulsory curriculum. This is the time when a young person's understanding of science should enable them to make sense of the world. It is important that the excitement, relevance, and crucial importance of science is clearly infused throughout the Key Stage 3 science curriculum, rather than a long list of facts that need to be learnt.

There will be a new programme of study at Key Stage 4 from 2006, all students will still have to learn science. The current substantial programme of study for science will be changed. In its place, there will be a smaller statutory core, suitable for all students. However, it is expected that the majority of students will spend the same proportion of their programmes on science as they do now, taking courses that lead to the equivalent of a double award GCSE. We have gone further.

We will create an entitlement for KS4 pupils to study a course in science equivalent to 2 GCSEs.

The new programme of study is designed to address a number of key issues:

- set out only the common core – to achieve a single award GCSE, students will have to study some additional science
- include selected areas that provide a broad and balanced science experience
- provide an essential basis for progression to other science and science-related courses
- contribute to students' personal development in a relevant and motivating way
- focus on skills, and knowledge and understanding of how science works to promote competence in analysing, problem solving and thinking about scientific issues in ways that are motivating and up to date.

The core single award qualification for science, develops scientific literacy for the 21st century, and will enable students to engage in the world of science as both consumer and citizen. It will prepare young people for future roles as householder, parent, and employee, and answers questions about themselves and their place in an increasingly technological world.

To achieve a double award, two alternative progression routes will be provided through the study of additional science GCSE.

Either take

- A course to develop a broad understanding of science, and engage students in the world of the scientist. This provides preparation for the more advanced study required for careers in engineering and medicine. The emphasis is on explaining and theorising.
- The second route focuses on developing practical scientific capability, and engaging students in the world in which science is applied to occupations such as health care, agriculture, manufacturing,

communications. It has a practical emphasis, developing procedural and technical understanding.

As well as introducing the new programme of study at Key Stage 4, the **Secondary National Strategy** and SLEs work with to help support the implementation of these changes and ensure that teachers, are well-prepared to deliver the new courses, and help support their pupils achieving high standards at GCSE. By extending the successful Key Stage 3 Strategy to cover the whole of the secondary phase, we anticipate that the existing success especially concerning the improvements in teaching and learning and attainment that have happened at Key Stage 3, will be replicated at Key Stage 4.

It is also important to consider the impact of the wider education system, and how other successful programmes and initiatives can feedback into the system more generally, and raise standards and expectations all. The Specialist School System, for example, is the cornerstone of the Departments for 5 Year Strategy published last summer, envisage these schools having a vital role in helping to improve the student's experience of science. Almost 2 in 5 of the current number of Specialist Schools specialise in science or technology. We know that Specialist Schools are improving at a faster rate than non specialists at Key Stage 3 and 4. Value added scores and attainment levels in science and technology specialist schools are among the highest of all of these types of schools. So clearly we have an opportunity to share the experience and expertise with a wider group of stakeholders.

Some of the issues to consider are example, the differences in representation and attainment between the genders, ethnic minority and socio economic groups. As a Government we are keen to ensure that whilst we try and improve standards and attainment for all, we do not generalise and adopt a blanket solution to apply to all students – and in fact it is important to recognise differences and ensure that there is genuine *equality of opportunity*.

The Department for Education and Skills and the Department for Trade and Industry, are collaborating to try and develop solutions to the problem of poor uptake of physics among girls. We have commissioned research analysing this issue, and from this will develop solutions that will tackle it from several perspectives including looking at classroom practice as well as using some of our other initiatives such as the Science Learning Centres.

The Science Learning Centres network will have a key role in offering training and professional development opportunities for teachers of science wider workforce. The training focuses predominantly on encouraging innovative and exciting teaching practice that will enthuse, excite and inspire young people. SLCs are jointly funded by the Wellcome Trust and the DfES, with a centre located in each of the regions and the National Centre based in York. This alongside the measures outlined in the 10 year Science and Innovation Framework highlight the importance we have placed on getting the quality and numbers of teachers of science right.

All these measures and more are targeted at improving the levels of attainment at 16, but there is also the post-16 dimension to consider and address. You will all undoubtedly be aware of the problem of post 16 take up of sciences. There has been a dramatic decline in the number of students studying science subjects at A-level and beyond. Even when students do pursue scientific study, a large number pursue careers in other sectors. This decline is dangerous not only because it means that as a country we will not have a labour force sufficiently skilled to take the economy forward but also that it is a problem that is self perpetuating.

So far I have outlined a number of initiatives and commitments that we have made at various times in a variety of strategy documents, it is of course important to bear in mind that all these elements are ultimately pieces of a multi dimensional jigsaw which will ensure that we have a sufficiently knowledgeable and skilled workforce to take the economy through and beyond the 21st century.