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"L'apprentissage des sciences dans l'Europe de la connaissance"

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Check against delivery

(Acknowledge authorities in attendance)

Monsieur le Ministre,
Mesdames et Messieurs,
Chers amis,

Introduction (in French)

Je vous remercie de votre invitation à cet événement dans cette belle ville de Grenoble. C'est avec un grand plaisir que je participe à cette conférence de la Présidence française. L'action de la France dans le domaine de l'éducation et de la formation est pour moi un encouragement et un signal très positif, qui nous invite à aller de l'avant.

Je crois que cette conférence représente une prise de conscience. Nous avons compris, aujourd'hui plus qu'hier, que la préparation des jeunes générations aux compétences scientifiques et technologiques est dans l'intérêt de la société dans son ensemble. Nous devons nous préparer à la "société de la connaissance" qui s'impose à nous chaque jour de manière plus évidente.

Nous ne partons pas de rien. En Europe, depuis des siècles, la science et la technologie font partie de notre patrimoine. Nos scientifiques, nos chercheurs, nos professeurs sont reconnus dans le monde entier. Je profite d'ailleurs de cette introduction pour saluer l'attribution des prix Nobel de médecine, ce lundi, à 3 médecins européens, dont deux Français. Je vois là un signe encourageant pour les jeunes scientifiques et chercheurs d'aujourd'hui, et ceux de demain.

Aujourd'hui, nous devons travailler dans deux directions. D'une part, former les scientifiques de demain. D'autre part, donner à tous les élèves la culture scientifique dont ils auront besoin pour réussir dans la vie.

The challenge

In a global world, Europe's most precious asset is its people – their skills and know-how, their ideas and innovation.

Quality education and training are indispensable, if Europe is to succeed – if we are to stay competitive, improve our standards of living, and keep our influence in the world.

And they are indispensable for our young people, who must be able to navigate a path securely and freely through the knowledge society.

Our children must leave school prepared for the world outside: ready and able to become active, engaged citizens; with the skills and attitudes to meet the demands and benefit from the opportunities of an ever-changing labour market; with the knowledge and creative capacity to shape our societies for the good of all.

Maths, science and technology education is a vital part of this palette of skills.

- Our schools and universities need to produce people who are capable of pushing back the boundaries of technology innovation. Technology doesn't just happen by itself. Technology is people – a whole chain of people who take the bright spark of invention and turn it into new products, new working methods, new ways of viewing the world.

But MST skills are not just for specialists. MST skills are essential for all our citizens.

- Increasingly, jobs need higher levels of skills. Already, **more than half of all Europe's workers are using computers**. The trend will intensify.

Our forecasts show a large increase in high and medium skilled jobs, and a sharp drop in jobs with little or no formal qualifications. As routine jobs die away, and creative tasks grow, people without basic MST skills will struggle to find satisfactory jobs.

- In addition, our daily environment is increasingly complex. We have to be able to grapple with difficult issues, whether this is a financial crisis or climate change. Without a measure of scientific and technological understanding, people may become frustrated and disengage from debate on ethical and social questions. MST skills are not just vital for jobs, they are part and parcel of being a citizen in today's world.

The context

But Europe is faced with a skills paradox in MST. Although the Union as a whole has done rather well by meeting, and even exceeding, the European target to increase the numbers of MST graduates by 15%, the picture is less encouraging than at first seems.

Growth rates vary between Member States and depending on the field of study – for example, a massive increase in computer science, almost zero growth in life sciences. Women continue to be under-represented.

And, despite the growth in numbers, we are simply not seeing this translated into MST jobs. There is a skills mismatch even on the relatively secure science & technology labour market.

Only a small number of MST graduates work in research – largely because we are still not spending enough on research in Europe. On the other hand, many companies find their hands tied when it comes to starting up new ventures because they can't find the MST skills they need.

In world terms, too, the picture for Europe is not encouraging. If we look westwards, there are significantly more researcher jobs in the US than in the EU, even though the EU has more MST graduates.

Looking east, China is producing more than twice as many MST graduates as the EU. And India is already the world's largest exporter of ICT services.

In schools, the PISA surveys show that Europe is not improving its performance in maths and science. Far too many of our young people are at serious risk of being left behind because they leave school without the basic maths, science and reading skills. We must redouble our efforts for these young people.

The European response

What has been our response in Europe? And how can we improve it?

- Working with Member States

First of all, there is genuine willingness to work together to find the right solutions. Member States are concerned – as shown by their agreement on setting a European target for MST.

The Commission has been supporting solid peer learning by the Member States, amassing a great deal of good practice and common understanding on how to improve science learning and teaching from school to university.

I am very pleased that this conference is closely linked to the work of the peer-learning group.

- Rocard report

I am also very pleased that yesterday you heard from Michel Rocard.

Two years ago, with my colleague Jan Potočník, commissioner in charge of Research, I launched a High Level Group, chaired by M. Rocard, on combating declining interest and raising recruitment into science and technology studies.

Their report sent a strong message on the need to overhaul science education in schools, to move away from ‘chalk and talk’ towards inquiry-based teaching. Good news travels fast: Japan has just translated the Rocard report into Japanese...

The Commission has put 60 million euro from the 7th Research Framework Programme into projects that pioneer innovative teaching methods in MST.

- *Addressing perceptions, changing teaching*

In fact, I think M. Rocard and his peers have put their finger on the problem. We need to tackle the perceptions and the practices that give science a bad name, even among very bright pupils.

Science subjects are perceived by pupils – and often, by their parents - as difficult, abstract and dry.

We need to grab pupils’ attention from the earliest age. As the research shows, pupils like practical work and linking school science with real-life. This, after all, is how science advances. And as we know, a ‘hands-on’ approach doesn’t mean ‘minds-off’. We'll never know if Archimedes really did take a bath..., or if Newton saw the apple fall..., but we do know that science advances by empirical observation, and this is the approach we should be fostering in our schools.

- *Schools for 21st century*

At the same time as we are re-thinking science teaching, we are reflecting on the role of schools in general. Can we equip our young people for the 21st century using methods that may not have changed much since the 19th?

Think of the amount of information a young woman or man from 100 years ago would have come across in the course of a week or a month. And compare it with how much our young people absorb from TV or the internet before they even leave for school in the morning...

We are producing and consuming knowledge far more intensively than in the past. This calls for new skills - to be creative and innovative, to adapt to change, to communicate well, to work in teams as well as individually.

We need to help our education systems to deal with this new world: to ensure that young people can develop their specific skills and talents, but also learn to work together, exchange ideas, enter into productive dialogue and cope with uncertainty.

It is therefore crucial to look in the round at the skills and attitudes that young people need.

One useful starting point is the set of key competences that Member States agree every young person should have leaving school. The key competences framework shows how skills overlap and interlock with each other. Learning in one area can strengthen skills in another, building up a set of interconnected skills so as to be creative and innovative in an interconnected world.

- Partnership approach – involving business

We need to connect up schools too, to support them through cooperation with other stakeholders – with universities, with the scientific professions, with business, to help foster innovation and a stimulating working environment.

The Commission will be unveiling a new initiative - New Skills for New Jobs - to help us predict the skills needed for the jobs of the future. By helping define the skills sets needed for jobs in scientific and technology fields, it will give these jobs a clearer, more attractive profile, and make it easier to match the skills young people learn and the skills they need for jobs.

I set up a University – Business forum earlier this year, where this is one of the issues on the table.

While respecting the competences of the Member States in the curricula of their schools systems, I believe that partnerships between companies and schools can

help schools to impart the new skills needed – problem solving, planning and managing learning, for example - as well as providing role models to attract students towards jobs in the research or scientific fields, for example. This approach may also help close the gender gap in the MST area.

Conclusions

In conclusion, yes, there is work ahead. But it is not a question of 'too little too late'. Let me quote the Chinese proverb:

"The best time to plant a tree is twenty years ago; the second best time is today".

By acting swiftly, decisively, and in concert, we can put Europe on the right footing for the 21st century.

Mesdames et messieurs, vous êtes à la mi-temps de vos travaux. Je sais que les tables rondes et réunions d'hier ont déjà produit des résultats substantiels et c'est avec grand intérêt que mes services et moi-même lirons le compte-rendu de ces deux jours de conférence.

Permettez-moi de féliciter de nouveau la Présidence française d'avoir organisé cet événement.

Je vous remercie.