



HOUSE OF LORDS

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Witnesses: Megan Richards and Andreas Schleicher

USE OF THE TRANSCRIPT

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Members present

Baroness Morgan of Huyton (Chairman)
 Lord Aberdare
 Earl of Courtown
 Baroness Garden of Frognal
 Lord Giddens
 Lord Holmes of Richmond
 Lord Janvrin
 Lord Kirkwood of Kirkhope
 Lord Lucas
 Lord Macdonald of Tradeston

Examination of Witnesses

Megan Richards, Principal Adviser, DG CONNECT, European Commission, and **Andreas Schleicher**, Director for Education and Skills and Special Adviser on Education Policy to the Secretary General, Organisation for Economic Co-operation and Development (via video link)

Q221 The Chairman: Welcome. Thank you very much indeed for joining us this morning. You probably know the background of what we are looking at as a Committee. There is a bit of housekeeping first before we go into the questions. You have a list of interests that have been declared by Committee members. They have been declared at previous meetings. This is a formal evidence-taking session of the Committee and a full shorthand note will be taken. This will be put on the public record in printed form and on the parliamentary website. You will be sent a copy of the transcript and you can revise any minor errors. This session is on the record, is being webcast live and will subsequently be accessible via the parliamentary website. You are very welcome to submit written supplementary evidence after the session. Indeed, we may request that you do that where we have particular areas we want to follow up. We will speak as clearly as we can. Shout if you are not hearing us properly.

I will ask you both to introduce yourselves. If you wish to make any opening remarks, that would be fine and very helpful. If you do not want to, we will go straight into the questions. It is entirely up to you. I will start with you, Ms Richards.

Megan Richards: I am delighted to be here, of course, particularly as a representative of the Commission. It is always nice to see that the UK still wants to hear from us. I am Principal Adviser, primarily responsible for internet governance issues, and I was previously responsible for digital skills issues in DG CONNECT of the European Commission. Would you like me to make some opening remarks?

The Chairman: Yes, please. That would be great.

Megan Richards: I was planning to speak to you about a number of things, but now that I have heard the last 10 minutes of your previous session I have more. One is that, as you may have seen, the new Commission, which was formed on 1 November, has appointed not only a digital Commissioner, in the form of Mr Oettinger, who was previously the Commissioner

responsible for energy, but a vice-president who is responsible for the digital single market. Mr Juncker has also said in his mission letters to these Commissioners, but also in the way in which he has organised the Commission, how important the digital economy is and he has taken a particular interest in it. That is already an interesting political sign from the European Commission, and one thing I wanted to put into context for you.

The other is that I wanted to speak to you about briefly about what we call the Grand Coalition for Digital Skills and Jobs programme. I think it addresses a number of the issues that you were speaking about in your previous discussions and that I have seen from your previous Committee hearings, and that is to bring together politicians, government, industry, educators and other interested parties to try to make sure that digital skills are promoted and encouraged and that the number of young women in these areas is increased, particularly in ICT skills. One of the things that is particularly important is to bring industry and government together. We have seen the claim many times from industry that there are huge numbers of jobs that it cannot fill. If you look at the job listings of any company online, you will see long lists of computer scientists and a whole list of different ICT-related jobs that are not yet filled for lack of skills. Secondly, there is the importance of bringing it to the very top levels of politics and government to make sure that the skill sets that are established and developed at school are those that are interesting and useful for industry but also to make sure that they work together to attain these goals.

One interesting example of success in this respect is Romania, where the Ministry of Education has worked hand in hand with the Ministry of Information Society and industry. Many European industries, and multinational industries as well, have now started to bring some of their ICT workers there. They have not brought people from the Philippines and India, obviously, but they have moved some of the jobs that were previously carried out in those countries to Romania because they found that people in Romania have the right skill sets and they speak European languages. In addition, Romania does not have the time zone difference, and the Government has introduced much more actively the skill sets that industry needs. In eastern European countries there also seems to be a higher number of young women working in ICT compared to western European countries. I have a lot more but I will stop at that.

The Chairman: We may ask you to send us specific information on that. Mr Schleicher.

Andreas Schleicher: Thank you and good morning. A couple of points to make would be that overall our analysis suggests that the UK is comparatively well positioned when it comes to access to communication technologies. That is quite well established, and deficiencies in the skills people have to use those technologies is probably the main barrier to productivity growth, particularly among the young population. When you look at the number of computers in households and the number of people having access to the internet, on all of those measures the UK would fare favourably compared with the EU and OECD averages. You do not get close to countries like Sweden, Norway and Korea, but that is not the main barrier. We also see that the use of technology is quite well established too. For example, 77% of adults in England use e-mail at least once a month, which is better than the OECD average. We also see in the workplace that the UK economy is quite good at extracting value from the ICT skills that people have. Better skills translate into significant earnings outcomes, which I will talk about in a moment.

That is the positive side. Looking at people's skills, in 2013 for the first time we measured the ICT problem-solving skills in populations in most OECD countries. When you do that, overall you can see that the UK's performance is more or less average but that only about 35% of adults in England could be considered reasonably well skilled for today's digital economy. They score at what we call level 2 and 3 on our ICT test, which means that they can operate everyday applications such as opening a spreadsheet, sending e-mails, linking applications and so on. This is not rocket science. Those are the kind of skills you need to get the benefit of the digital world. That is about 35% in England, similar to the OECD average of 34%, but you have countries like Sweden, the Netherlands, Australia and Canada with significantly higher shares of people being able to do that. England is particularly strong in the older generation. When you look at 55 to 64 year-olds, you have about 18% performing at levels 2 and 3 and that compares to the OECD average of just 12%, so the UK is well positioned in the older generation.

But the counterpart, and this is probably the most troubling finding, is that in England, and even more so in Northern Ireland, young adults have much poorer digital skills on average than across OECD countries. Only 42% of 16 to 24 year-olds score at levels 2 and 3 on our ICT test. That is more than the older generation, but in most other countries the younger generation will be considerably better positioned than the older generation, so this is where the UK lags behind. When you look at top-performing countries it is 63% in Korea, 62% in Finland and 62% in Sweden. Those countries have a young population that is much better positioned to benefit from and contribute to the digital world. That is the main barrier to productivity growth at the moment. It is not an isolated deficit, by the way. We can see a similar skill deficit in numeracy and literacy among the younger generation, so those things do correlate. When you think about what you can do to remedy that weakness, it probably comes to foundation skills in general. One point to note is that we do see significant gender gaps. You see them in all countries but in England they are more pronounced than they are across OECD countries.

Why do all those things matter? We see that digital skills are very significantly associated with higher labour force participation and lower unemployment. In fact, one of the things that you can see is that the only employment growth we have seen in the EU area, and also in the OECD area, has been at the high end of the digital skills distribution. But that is the only area where employment growth is happening. If you have very poor digital skills, there has been little change. Many jobs in the UK economy do not require great problem-solving or digital skills, but the biggest loss has been in the middle half of the distribution. For example, office workers who are not catching up with the technologies are paying the biggest price. It is very important to keep in mind that there is a kind of skills-based polarisation of the UK labour market.

In terms of earning outcomes, this is not just an employment story; it is also a significant wage story. What is interesting is that the link between digital skills and productivity or earnings is often stronger than the link with formal qualifications, so having better digital skills at a lower level of formal qualification can turn into a bigger earnings advantage than having a university degree but poorer digital skills.

Q222 The Chairman: Can I pause you there? You have raised a whole lot of very significant issues. I think we want to drill in more detail into some of those broad headlines that you have given us with some really useful statistics. First is the issue of economic growth. Mr

Schleicher, you have just talked about that a bit anyway, but the Committee wants to get a feel from both of you about the importance of the digital sector and of digital skills in the wider sense. How important is that for economic growth? Perhaps you could give us some examples from across Europe where the digital sector in particular is doing well and flourishing, and what is being done to try to develop competitiveness in that area. I will come to Ms Richards first.

Megan Richards: I will give you information that is EU-wide but, of course, there are huge variations between countries, between Greece and Romania, the Nordic countries et cetera. Overall in the EU—I am sure the OECD can give you more detailed statistics specific to the UK—we see that the ICT industry's share of GDP is around 4.4%. That is overall, for all of Europe, and of course, as I said, it differs quite significantly from one country to another. But the overall contribution of ICT to GDP growth through production and use in the economy is much larger, and that is sometimes estimated to be even up to a third of the value of GDP growth.

Again, there is a whole series of statistics and studies—I am sure the OECD will give you all the detailed information; I can provide you with the information later but I will not go into the details now—where we see quite significant differences between the way ICT is integrated and used in companies in the United States, for example, or in some of the Nordic countries, and the way that ICT skills and activities have been integrated into other industries compared to just ICT-specific industries. I think there is an important distinction there on that particular aspect, and your previous speakers were talking about that.

Andreas Schleicher: I do not have much to add to that. I would just say that at the level of individuals, the kind of wage increase that is associated with digital skills gives you a good indication of how significant the benefits are of being equipped for the digital economy. You can look at this at the aggregate level in terms of economic growth, but at the individual level, in terms of greater pay-off, these numbers are very significant. They are bigger in the UK than they are on average across countries, which tells you that having the right conditions in the UK means that the economy is very good at converting digital skills into better jobs and better economic outcomes for people.

Megan Richards: May I add one thing relating to education? Looking at the Nordic countries, and taking Finland as an example, ICT as a topic per se is not introduced so dramatically in schools, because they have quite a different schooling system and the teachers have a lot more independence. However, Finland always comes out at the very top of the PISA scales. The results are very good. They have a huge gaming industry. Companies like Rovio, which is behind Angry Birds, could not possibly have developed without the skill set that they have. There are very different ways that these activities are carried out in each of the different EU countries, but the Nordic countries are quite interesting as examples.

Q223 Earl of Courtown: You have already mentioned a number of the different countries round Europe, but do you have anything more to add about the countries and cities where they have got digital inclusion right and perhaps, specifically, about where the best digital tech clusters are? Also, combined with that but just as important, what have Governments done to help these clusters exist and achieve so much?

Megan Richards: The highest rates of digital inclusion in Europe are in the Nordic countries, as I have mentioned already, the Netherlands and Luxembourg. Of course, in the

Netherlands and Luxembourg you have a very high density of population. Luxembourg has a relatively small population but it is still quite dense, so you have relatively easy broadband rollout and access to the internet, and the school systems are perhaps easier in some ways to manage. With the digital tech clusters, it depends on whether you are comparing within EU or comparing the EU to areas outside Europe. In the US, of course, Silicon Valley and the MIT Boston clusters are classic examples, but then also in the UK you have Cambridge and—what is it called in London?

The Chairman: Tech City.

Megan Richards: Tech City. Is it called the Fen Valley in Cambridge? There are others. Berlin, of course, is very active. There are areas around Munich, Paris, also Sophia Antipolis in southern France, so there are other areas where this is developing. Again, I think it is a combination of Governments taking an active interest in making sure that facilities are made available and industry taking advantage. In Berlin there were a lot of empty buildings and the Government were quite supportive in encouraging these activities. There are a lot of high-tech universities around Berlin. Of course, in Germany too I think the attitude towards education and the use of vocational education is a particularly important aspect, so you did not necessarily have to do a degree in computer science at university in order to be able to work in a job that requires digital skills.

Just as an aside, there is a wonderful case in Ireland of a group—whose name escapes me for a second but I will send it to you—that has taken a number of long-term unemployed people and taught them coding skills. That takes three weeks or a month—really not very long—and then they have all gone immediately into jobs, because there is a huge demand for these kinds of skills. A number of them were single mothers, who were then able to work from home, so there is a whole series of great advantages.

One of the issues you were discussing with your previous speakers was the role of women and trying to encourage young women in these areas. My personal view, is that trying to tell girls they should be more interested in computer science is not going to work, for all sorts of reasons. But I think that using the back door to get in will be more successful: telling them that you have to have ICT skills in order to be involved in the fashion industry, in media, in publishing, or in whatever other area it is where they need those skills is more likely to work.

Andreas Schleicher: I think it is important to look also beyond Europe. The countries with the steepest progress in this area, like Korea, Singapore, Japan and even some provinces in China, consider the digital infrastructure like they consider roads and piped water. It is something the Government take care of and is universally available. In Korea it starts with school. Every school can access high-speed internet and the curriculum is fully on the digital domain. You can do your homework on your mobile phone. It is an integral part of the infrastructure there; strong government investment in the infrastructure and the expectation that citizens will use it. Most services are in e-government, so it is really interesting to look at it. Unfortunately, we do not have data on the level of individual cities. It would be an interesting comparison. We just have them at the aggregate of countries.

The Nordic countries in Europe have a long tradition in this and also have a very strong skill base, or they have universal literacy skills so the access to technology is not a big barrier for most people. Looking at Asian countries that have very recently established their infrastructure and the capacity to use it is very instructive too.

The Chairman: In your view, has that come directly from the Government setting out a very clear direction of travel?

Andreas Schleicher: Absolutely. If you look at countries like Korea, Singapore and China, it is basically a clear investment strategy on the part of the Government, making sure that everybody has access to the infrastructure and then drawing out the benefits from that. As you can see from the numbers on the returns, it is probably the best investment that you can make. Keep in mind, in the case of England, the skill base barriers are significant. If you do not address them you will not get the benefit out of the infrastructure. That is an area where these countries in Asia and in northern Europe are simply better positioned than the UK, particularly in the young population.

Q224 Lord Holmes of Richmond: Good morning. We have touched on this a bit so I will just develop some of the themes you have pulled out. What sort of business-friendly approach best supports the digital economy and what does effective digital government look like?

Andreas Schleicher: This is not an area I am particularly specialised in. I would have to check with my colleagues.

The Chairman: Okay. It would be very helpful if you can send us anything on that.

Megan Richards: I am glad you asked the question. I do not have an exact answer, of course. However, I think that this is an area where Governments have a wonderful opportunity to improve and roll out e-government, which is a great benefit for citizens. If you have citizens who have digital skills so they can fill out their tax forms online from a distance without having to go into the office you reduce transportation and increase efficiency. The OECD was also saying that the older population in the UK has greater digital skills compared to other EU countries, which is a great advantage. Those are people who are going to want to use better government facilities online; but also think of all the health benefits. If you have remote help in your home for an ageing population, which we all have in Europe, and that ageing population has sufficient skills—it does not usually take huge skills—this kind of activity can bring wonderful opportunities and benefits, by reducing transportation time, cutting costs, and making things much more efficient.

One of the arguments always being made is that digital skills should be concentrated on the young and we should forget about people over—I do not know where the cut-off is. Obviously you want to concentrate on youth but I think there is still an advantage in educating elderly people. Perhaps the trick is to make sure the young people educate the older and vice versa rather than the other way round.

Q225 Lord Kirkwood of Kirkhope: There is an inclusion dimension to that, which Governments also need to solve, which I would like both our witnesses to comment on briefly. If low-income households, for example, do not have access to the internet, what is the duty, if any, of Governments to enable that access so that the inequality divide does not get worse in the near future? Could I ask both witnesses to comment briefly on that?

Megan Richards: In some cities, it has been the policy of the city to provide internet access, which has been extremely useful. The mayors of Manchester and Birmingham, for example, have been extremely active in ensuring that broadband rollout is carried out within the city, pushing the smart city agenda. They have been particularly active. Those two come to mind immediately but there are other cities that have also been very active.

The statistics I have seen are contrary to what the previous speakers said. In the United States, it has been shown that the inner-city children and youth are developing increased IT skills. There are more young minority people in inner cities in the United States who have these ICT skills and are developing them for all the reasons that you know: it is relatively easy; you can do some of them online; some cities have been providing internet access; and there are public libraries that all have internet et cetera. I suppose also to a certain extent in the United States some of these products and devices are probably slightly cheaper than they are here. Almost everyone has a mobile phone, as they do in Europe. But the statistics I have seen show that those minorities are beginning to have a higher incidence of ICT skills, and an increase in ICT skills. They are having problems getting jobs for a whole series of other reasons, but if I can find those statistics I can send them to you.

Lord Kirkwood of Kirkhope: Devolving to cities is one potential answer.

Megan Richards: That is one answer.

Lord Kirkwood of Kirkhope: Thank you. Mr Schleicher?

Andreas Schleicher: We have quite good data on the link between social background and digital outcomes. The distribution of the infrastructure it is much more accurately distributed than the distribution of the skills to use that infrastructure because the home use of digital technologies is not the final criterion. It is access to digital technology at work, and if you look at who gets those kinds of jobs, it is people who have the better skills to use the technology. The inequalities are amplified by the UK labour market. I do not think it is a matter of just equipping every household with broadband access. That is a good thing to do but it is not going to address the inequalities. The inequalities come from the inequalities in the skills of people, which are much stronger in the UK than they are elsewhere. It is not so much, in my assessment, an issue of technology as it is about addressing inequality in schooling and access to jobs.

The Chairman: Can I check something that you said in your previous answer? I think you were saying to us—I just want to make sure I have this right—that part of the problem about our younger population being relatively unskilled digitally is because their basic skills, presumably literacy and numeracy, are of too low a level as well. Is that right? It is part of the whole piece.

Andreas Schleicher: That is correct. The poor digital skills in the youth population are mirrored in below average numeracy and literacy skills. We have done some simulation of where you could get the biggest short-term return and there is some truth in saying that it is about basically equipping people with better digital skills at a low enough distribution. You could get some short-term wins on that, but in the long run it is basically an issue of foundation skills, which are quite weak in the young generation.

Megan Richards: May I just add one point on that? I think that is a very interesting observation from the OECD specific to the UK. In our Digital Agenda Scoreboard, which is published every year and has more information than you could possibly want to see, one thing always comes out that is particularly interesting and relates to the digital divide. If you look at urban and rural, rich and poor, educated and uneducated, you see quite interesting divisions between those groups. But in the under-25 group—this is EU-wide, not specifically here—you do not see those distinctions. The group under the age of 25 do not have those distinctions and that divide to the same extent that you see everywhere else in the

population. But the OECD says that in the UK poor digital skills among youth is a factor, and I think that is a very important element to take into consideration.

Lord Giddens: Does any other Member want to ask about inequality, because I wanted to just bung something else under this heading.

The Chairman: Yes, go on. You bung away.

Lord Giddens: Could you comment a bit about the digital agenda and SMEs? Over 90% of businesses in Europe are SMEs, and we know that if you run a small business now you can immediately become a global business because of the internet. We know also that a lot of SMEs do not do that and they are not trained up to do that. I know it is a big part of your work. Maybe you could comment on how you fit it into the wider agenda since Europe's economic future might depend in some large part on that.

Megan Richards: First of all, in the Grand Coalition for Digital Jobs that I mentioned, we do involve SME. It is one of the areas where we try to bring in SMEs and encourage them to participate and make sure that they have the necessary information. A huge effort is taken in the European Commission to develop and encourage SMEs in general but also with respect to ICT skills: helping them to get access to information, to improve the way they hire and fire and to use better skills.

There is also Startup Europe, where we try to drive further assistance for SMEs in the digital area. In addition, in the new Horizon 2020 research and innovation programme, which goes from 2014 to 2020, there is a much greater emphasis on assistance to SMEs, in particular in introducing them to R&D assistance and innovation support. The innovation support in particular for SMEs in that context has been underlined much more in this particular programme than it has in the past. It existed in the past but there is a much greater emphasis on it in this current programme.

I think all those other factors are important and, again, I could send you reams of paper on this particular issue. I am sure you do not want reams but we can send you some detailed information about the specific programmes that are available to SMEs.

Q226 Baroness Garden of Frognal: You have already referred to the OECD evidence that highlights education, gender and age, which have a relationship with problem-solving capability. How do you see education and digital technologies being used to level the playing field for disadvantaged groups and what role is there for government in helping that to come about?

Andreas Schleicher: There is a lot Governments can do on that. It is not just a matter of digital technology. You have countries that use digital technology very effectively in spreading classroom practice, connecting schools, connecting students and giving students in disadvantaged communities access to great educational experiences. It is also a matter of the way these countries generally use their resources. If you go to the Nordic countries, they do so well because they attract great teachers in disadvantaged schools. They allocate their human resources in such a way that the challenges are matched with the skill distribution. They typically have much more demanding standards than you have in the UK. Typically every child, irrespective of their social background, is expected to demonstrate great skills. I would say those aspects would matter at least as much as the direct use of digital technology in the classroom.

Great technology can leverage great teaching practices, making it accessible and spreading the knowledge and so on, but there are very few examples where you use good technology to replace poor teaching in classrooms. That is not something that we can see in many places.

The Chairman: Can you tell us anything about teacher training in the best countries?

Andreas Schleicher: We looked at this from the demand side. It is the second most wanted field from teachers themselves. Teachers do not feel equipped to use technology and integrate it into pedagogical practice. There is a lot of teaching of ICT skills in education but the key is to integrate it into the teaching of every skill in every school subject, and that is something where I think teachers themselves express a great need. That is true in England—we do not have data for other areas of the UK—and it is true for most of the OECD countries. Investing in integration—giving the ordinary teacher, not the ICT teacher, that experience and better access to technology—could make a world of difference.

The Chairman: Is there anywhere that does that very well? Where do we look that does that very well?

Andreas Schleicher: Number one is probably Singapore on that score, and in Asia there is also Korea and Shanghai in China. The Asian countries have made a lot of investments in this area. They encourage digital skills in the sense that they combine it with the professional development of the teaching force.

Q227 Lord Janvrin: Just to follow up on this one: looking at your knowledge of different countries' performance, what about lifelong learning? Who is getting that right and how are they getting it right throughout people's careers and so on?

Andreas Schleicher: In Europe you would probably look to countries like Sweden, followed by Norway and Denmark. First, they modularise education a lot more than in the UK. You can accumulate qualifications over your life cycle, you can alternate education and work, and employers are a lot more open to people continuing their education. When you look at the age distribution of when people get their university qualifications or their PhD, you see lots of people in their 40s and 50s completing their education. This integration of education and work is very effective in terms of skill development. When it comes to qualification frameworks, Governments are a lot more open to lifelong and, I would say, "lifelike" learning. In many aspects of life you can build human capital.

The UK is not badly positioned in terms of access to continuing education and training. The incidence is above average but the intensity is very low. Employers in the UK invest in filling short-term skill gaps but they do not invest in the kind of sustained development that upgrades human capital. If you look superficially at participation rates, the UK would score quite well but you would not get anywhere near countries like Sweden when you look at intensity.

The Chairman: That is very interesting, thank you. Do you want to come in, Ms Richards?

Megan Richards: I just want to pick up on one thing, which is one of the issues you were discussing with the previous speakers as well, on the role of MOOCs. Would this not be an area that could be of potential use? You have the wonderful example of the Open University, which is kind of a MOOC before they existed.

The Chairman: Yes, an early version.

Megan Richards: I would have thought that in the UK that is something that already exists, and people know what it is. It is an area you could perhaps develop further and find that it was adopted and accepted much more easily than in some other cases.

One other point that I wanted to pick up on from the OECD comments is the availability of equipment in schools. I am sure you have all seen those wonderful YouTube videos of Sugata Mitra with the hole-in-the wall computer. In this area, which is developing so quickly and so rapidly, those of us in this room—none of us are under 25, I am sure—have a different way of looking at these things. Young people seem to somehow have a capacity to learn these things. I have a suspicion that if you just throw certain equipment into the room they will learn to use it themselves. If you had 3D manufacturing equipment in a school I bet that the children would learn how to use it.

This is a real barrier in some schools where teachers have no idea how those things work. It is unfortunate that they are then forced to be teaching these skills to students who, in fact, are probably better and handier.

Andreas Schleicher: I will add one word of caution. I am a great supporter, fan and user of MOOCs, but the biggest MOOC providers—FutureLearn in the UK or Coursera and edX in the United States—have completion rates of between 3% and 5%. I think this tells you that technology without policy or qualification frameworks will not get you anywhere. If you were to build the MOOCs into your national qualification systems and have an approach that recognises the qualifications or the skills that are built there, you would probably get a lot out of it, but currently it goes nowhere.

Q228 The Chairman: Can I take you back to a comment you were making about lifelong learning in other countries, particularly the Nordic countries, being very successful and in more depth than is done in the UK? How is that funded? Do people fund themselves, does industry fund or does government fund? Obviously we have a fair amount of money going into our further education sector, although there is a question about how well it is used, but I am interested in the role of the different partners in that.

Andreas Schleicher: That is a very interesting question. Of course when it comes to formal education and training in the Nordic countries it is all government funded. But the true costs are not in the tuition; the true costs lie in forgoing earnings. So you can see how people finance their continuing education and training. One interesting finding that we have is that the labour market in those countries, particularly in Sweden, is very sensitive to skills. If you invest in your own skills, the kind of degrees and qualifications that you get are very fine-grained, so the labour market picks it up. Most of the cost and the burden is paid by the individuals. People are willing to invest in their skills because they translate into access to more jobs and ultimately better earnings. I would put more attention on that than simply finding ways of how you can subsidise that kind of education and training.

What you also have is very flexible work environments, so basically people can decide when, how and where they learn, and employers are very open to that. Typically you can negotiate a reduction in work time with your employer to pursue a course. The whole environment is very conducive to that, but I would argue that the direct cost is largely borne by the individuals themselves.

Megan Richards: May I add a point on that, if you do not mind? In the Grand Coalition for Digital Jobs group that we have brought together with government, industry et cetera, one

of the issues that industry constantly complains about is that even university graduates in ICT do not have the skill sets that they need to bring people directly into a job. So one of the areas where we have tried to encourage them to do more is the introduction of more certification of particular skills, skill development within the industry and transferring people from one industry to another for short periods of time. I think that is an important element as well. Even if you were to invest everything in education, you would not necessarily meet all the skill requirements that industry requires, so it really has to be done together.

The Chairman: If you do not mind, can I take you back? The Nordic countries are particularly interesting for us in some of the areas. How do you think the population know that investing in their own improved skills is going to give payback? How do they know that? Where does that information come from?

Andreas Schleicher: It is a good question. There is no formal system that tells you that that kind of education pathway is leading to those kinds of returns. In fact, there is a lot of misalignment between skills. There are a lot of young people studying media science because they find it very interesting without necessarily getting access to better jobs. The one thing that you can be pretty confident of in the Nordic countries is that if you invest in skills it is going to translate into a better job. That knowledge is very deeply rooted.

The Chairman: It is cultural, yes. Thank you.

Q229 Lord Giddens: Despite all the hype, the EU has not done very well in terms of integrating its energy systems. How is it going to do better with digital infrastructure? This is a core part, as you said, of Mr Juncker's proposal. He put the digital agenda right at the very top of what he said when he gave his first speech, so it is very important to the Commission and to Europe more generally. But how are we going to do it? How are we going to up infrastructure at a pan-European level, because actually Europe seems to be falling behind other parts of the world rather than leading?

Megan Richards: It is not just Mr Juncker who is going to have to do it. Of course the member states have an important role in this too. You may remember that in the last financial framework there was a proposal for a Connecting Europe Facility, of which €9 billion was foreseen for IT infrastructure. That was effectively cut out, to be perfectly blunt about it. I think they were left with less than €1 billion over seven years. Now I think Mr Juncker is going to try to come back with this. There is another proposal to try to encourage and support digital infrastructure in Europe and to try to improve interconnections between countries. There is the Connected Continent proposal, which was already developed under Neelie Kroes, that is going through the Council now. So there are a number of initiatives that have already been started. Poor Mr Juncker has only been in office for three days so we will see, but I am absolutely convinced this is an area where he is going to want to push further. We have seen this already in the mission statements that he has sent to Commissioner Oettinger and to the vice-president for the digital single market. This is an area where he has asked all to work hard and he has given quite clear timelines for pushing through that. Again, it is not something that is done at EU level in Brussels, it is done by everyone. This is really important.

Q230 The Chairman: We have heard general evidence that Europe is falling behind in terms of investment in other parts of world. From the OECD point of view, from your research, can

you give us some insights into who is moving ahead and why, and what you think is needed in Europe?

Andreas Schleicher: This is an area that my colleagues from science, technology and innovation would be better positioned to respond to. Overall I think, in all of those measures, Asia is moving a lot faster than Europe. The United States is moving in pockets faster. Overall I think the US is in a worse position than much of Europe if you take the average, but the pockets are moving much faster. They have the combination in those pockets between the venture capital and the skill base to make big headway. In Asia it is an infrastructure investment on the part of government. I would encourage you to not just look at Europe; the most interesting and rapid improvement is happening currently in East Asia.

The Chairman: If you could get your colleagues to send us any more detail on that it would be extremely helpful. Thank you.

Lord Giddens: If I could just follow up, Europe is currently divided between north and south, and we need to help southern countries. Can we use investment in digital infrastructure to try to help Greece, Italy and those countries again become more part of Europe? Can we do that?

Megan Richards: I think so. I would have thought that this is where you can make a lot of progress. You have more than 50% youth unemployment in Greece, for example, and you do not even need a laptop computer, you just need a mobile device to be able to start working and innovating. As very anecdotal example, the Dutch embassy in Athens had empty space on its ground floor. It was not quite sure what to do with it so the current ambassador said, “I will open it up and make a little technology park”. He has opened it up to all sorts of young Greek digital innovators who have come in and used the space in four, five, six-month periods—even for a few weeks—to develop new applications or new innovative ideas. It has been extremely successful. Of course some of the Dutch companies are helping to support it as well and they are interested in buying these results. That is a very anecdotal case, but you have a huge potential for development in those areas in particular. But it is not just infrastructure.

Andreas Schleicher: Actually parts of southern Europe are quite well positioned in terms of digital technologies. Portugal, for example, is a country that compares very favourably to the UK and much of Europe. Even Greece compares a lot better on the technology park than on the capacity to use those technologies. I think this is where the bottleneck is: translating the availability of the infrastructure into better jobs and better lives for people. I would be rather sceptical about more technology in those countries.

I can give you another example. In terms of formal qualifications, Greece has more people completing high school than the completion rate in the UK, but the problem is that those degrees are not worth very much in terms of the actual skills people have. We know that for Spain and other countries. One would need to have an integrated package that combines the infrastructure—

The Chairman: The skills, the digital skills.

Andreas Schleicher: With a skill base but also with an industry that is receptive to those skills, an area where I would rate the UK very highly. Your economy is very open to skills and very good at extracting value from skills. That is certainly not the case in southern Europe.

Megan Richards: If I could add something on that aspect, the legal and financial framework is very important in this respect too. You need labour laws and bankruptcy laws, as well as other financial and tax incentives, to be able to further the industrial element or the business element of these skills. That is something that we in Europe lag behind in—I am sure you have all the details at hand. Some countries are better than others—the UK is one—but overall the EU is not as good as other areas.

Q231 Lord Lucas: Could you give us one single suggestion for what we should be doing to improve UK digital skills, or indeed European digital skills, if that is something we can make a real contribution to? How would you make it happen and at what cost?

The Chairman: In a sense, we are asking for the advice we should be giving as a Committee to our Government. In terms of what you have seen and what you have described to us today, what is the one aspect of it that you think is most important?

Andreas Schleicher: In the long run it is teaching young people better mathematics skills. Those are highly correlated with digital skills. That would be the investment that would give you the biggest return. However, that of course does not solve today's problem. I would think that investment in those foundations, particularly in disadvantaged communities, is probably the biggest barrier in the UK. In the short run, you can gain a lot by investing in infrastructure. We have published a paper where we have simulations of what we gained from improvements in ICT areas, which I will send to you, but I think the big one really is the foundations.

The Chairman: That is to move the whole population up, in a sense?

Andreas Schleicher: Yes.

Megan Richards: Of course that is a very good proposal. I will repeat one of the things that I said at the very beginning, which is about making sure that these problems are known at the highest political level and that government works hand in hand with industry and with the educational system. I cannot see how any one group can succeed in this without working together with others. Your responsibility and the opportunity for you to take this on is a wonderful one. You have heard all sorts of testimony from people and you know this issue probably better than anyone else in the UK, so you telling other people how important it is and showing them what can be done is very important.

How to do it? I can leave that in your hands. How much it will cost? I could not tell you. I also agree that it is not just infrastructure, it is not just skills; it is everything. It is the whole package together, including the legal framework. That is very important.

Lord Kirkwood of Kirkhope: I do not want to delay proceedings, Chair, but could I confirm that Mr Schleicher is going to send us some data on the relative poor performance of the under-25s?

The Chairman: Absolutely.

Lord Kirkwood of Kirkhope: The most striking thing this morning has been learning that, so perhaps we could get chapter and verse on it. Someone said it was a UK figure and not just an English figure, but I would like that clarified as well. It would be very useful if we could have that data in writing.

Ms Richards, you said right at the very beginning that there was some new thinking and, indeed, that the vice-president has now been allocated responsibility for that. Does that mean that, for example, if we were able to understand better the fact that our under-25s were underperforming compared to the rest, that some new programmes might be emerging at a European level that we could take an interest in, participate in and perhaps seek some funding for?

Megan Richards: Yes, quite possibly.

The Chairman: Watch this space, I think. Thank you both very much indeed. That has been very helpful and we will follow up with a couple of specific items where we would like some more information. That has been very useful. Thank you very much indeed.