# Science and Technology Committee

## Oral evidence: Digital skills gap, HC 740

## Tuesday 8 March 2016

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Written evidence from witnesses:

- Go ON UK
- Ofcom
- Department for Culture, Media and Sport

Watch the meeting

Members present: Nicola Blackwood (Chair); Victoria Borwick; Chris Green; Carol Monaghan; Graham Stringer; Matt Warman

Questions 135-175

Witnesses: **Rachel Neaman,** Chief Executive, Go ON UK, and **James Thickett,** Director of Market Developments, Ofcom, gave evidence.

**Q135 Chair:** I welcome the first panel to the third and final session of our digital skills inquiry, in which we are focusing on digital inclusion but also on upskilling the digital workforce and the digital skills crisis, about which we received evidence in our previous inquiry into big data. We have received evidence from techUK and the Tech Partnership that the digital skills gap is costing the economy about £2 billion a year; that 93% of companies report it is already affecting operations and recruitment; and that just 35% of ICT teachers have a relevant qualification, compared with 88% of biology teachers, and about half of them told Nesta in a survey that they do not feel confident teaching the computing curriculum. We also hear from businesses, big and small, that upskilling their existing workforce in digital skills in a future where more digital skills will be required is one of their key concerns. Ms Neaman, could I kick off by asking what you think are the most critical challenges facing us for skills development in the digital economy, and what is the best way to meet those challenges?

***Rachel Neaman***: The place to start is what the digital skills gap is at the moment. We have a huge digital skills gap at all levels. The work we do at Go ON UK focuses very much on basic digital skills levels. Almost one in four adults—12.6 million adults or 23% of the UK adult population—do not have those skills. That is a very large number of people who do not have any form of digital skill. In terms of the workforce, while just over half that number are over 65, it means that just under half are of working age. If that

number of people of working age do not have those skills they will not be able to find a job, and they will not be able to meet the job requirements when they are in a job. We need to do something urgently to deal with that. If we are not giving people the basic digital skills they need today, we will not have the intermediate and advanced digital skills tomorrow that we need to plug the higher-end skills gap. We are hearing from businesses that they cannot recruit the skills they need. Therefore, on the one hand, there is a skills gap at the high end, and, on the other hand, we are not managing to upskill people at the lower end, so somewhere along the line there is a mismatch in that pipeline.

**Q135 Chair:** Mr Thickett, we have just heard from Ms Neaman that we need to focus more on plugging the basic skills gap and not forget it, while recognising that we also have a problem at the higher end. There is a problem all the way along the pipeline. Do you recognise that analysis? What do you think is our greatest challenge?

***James Thickett***: We recognise the analysis, but Ofcom is particularly focused on one area, which is media literacy or digital literacy. In particular, we have found the way children and adults develop skills to be able to get the most out of the internet in a whole range of applications throughout their lives. We have been conducting research for the past 10 years, particularly in the area of critical evaluation, where we find that people's confidence with the internet has grown. People have fewer concerns than they did. In 2005, about 70% of people were concerned about the internet; now it is less than 50%. At the same time, they are not necessarily developing the critical savviness or nous to be able to get the most out of the internet. This applies to young people and children as much as to adults. We see it as an issue that affects everybody; it is not just about business and developing skills to get a job.

Most people can tell the difference between reading *The Guardian* and reading an article in *The Sun.* Most people know that if they walk down the street and shout at people there will be consequences; and most people can tell the difference between adverts on television and editorial content. People are finding it increasingly harder to make those critical judgments online, which impairs their ability to get the most out of the internet. For instance, we find that about a quarter of adults believe that any search engine result that comes up will be automatically true, and in some videos they mistake ads for editorial content. Our research focuses on trying to highlight those issues and we work with a whole range of organisations to make sure they are recognised as part of a coherent digital skills strategy.

**Q136 Chair:** In other words, what is happening in real life is also happening in the digital world and we need to apply similar critical thinking to our digital experiences.

***James Thickett***: Absolutely. One of the biggest mistakes people make is that they think the digital world is over here and the analogue world is over there, whereas in reality they are the same thing. Increasingly, with this generation of digital natives we see that parents almost delegate responsibility for all things digital to their children. Nearly half of parents think their children know more about the internet than they do, but they should be doing what they do in real life, which is to give them advice and guide them on what they should and should not be doing, telling them what is right and what is wrong, and what is good behaviour and what is bad behaviour. That applies to the internet as much as to anything

else. It is developing these skills early on that will help people get the most out of the internet later in life.

**Q137 Chair:** Ms Neaman, if we have this problem all the way along the pipeline from basic to higher skills, which we urgently need to plug and address, what more do the Government need to do to ensure we get the upskilling and basic skills right for the next generation?

***Rachel Neaman***: Several different approaches are needed. To pick up James's point, for a start we need to look at digital skills as a core skill alongside literacy and numeracy. We should have as a frame of reference that they are as important as literacy and numeracy, whether we get that absolutely embedded into the curriculum for children at all levels, whether we put it into the way we train our apprentices or whether we put it into the adult skills budget and adult learning. That is important because the literacy element of it is how we use things digitally and get used to that medium becoming something we use to increase our life chances. That is the first thing: the adult skills budget, curricula and so on; and digital literacy as a core skill.

More needs to be done to raise awareness of the issue. We need to be much more transparent about where people are and are not lacking these skills. Go ON UK produced a digital exclusion heat map in October, which identifies across the UK the likelihood of exclusion for a range of reasons, including skills and infrastructure. We can use an evidence base of that sort to target interventions locally. Local government needs to be empowered to do more to identify skills needs in their local communities and support those.

We need a much more joined-up and co-ordinated approach to skills at all levels. There needs to be more investment in skills programmes at all levels, but there is not a one-size-fits-all solution. We need to test and learn some different approaches and identify the four or five key approaches that we can scale up across the UK to help that broad range of individuals to gain the skills they need.

**Q138 Graham Stringer:** Mr Thickett, you have given us some of the conclusions of your research into media literacy and social media. Is there anything you have not touched on that came from that research?

***James Thickett***: One of the things I have not touched on is the importance of access and availability as part of a coherent digital skills strategy. At the moment, 86% of the UK adult population have internet access, and about 80% have internet access at home. The growth in internet access is now largely through smartphones. What we have found interesting is that, particularly in the past two to three years, the group that tends to be left out of the internet—the lower social groups, or the Ds and Es of working age—is more likely to access the internet through smartphones. Although smartphones are very sophisticated devices, they are necessarily limited in what they can do. We have seen research, which we are following up with our own research, showing that, if you rely on a smartphone to do your daily internet activities, you reduce the scope of those activities. In particular, getting a job is very difficult if you access the internet only through a smartphone. A whole range of skills that grew up between 2000 and 2015 were designed to be accessed through a traditional computer or laptop, but now a whole new range of

skills and services are needed that are accessible by smartphones, if we are to get this generation actively participating in the internet.

**Q139 Graham Stringer:** Have consumer attitudes been changed by greater availability and access to the internet?

***James Thickett***: Yes. We found two parallel trends. Over the past 10 years that we have been doing our research, people have become more confident about the internet. They say that in all sorts of ways. They do more things. They are more likely to take risks in what they do in terms of privacy, in visiting websites they have never been to before and in doing banking and shopping. That has been very positive. At the same time, people's concerns about the internet are reducing, apart from one group—the over-65s—who are still very worried and anxious about it.

The confluence of these two trends is not necessarily all positive. The outcome is that there is a risk that people are too lackadaisical and are not going into the internet with open eyes. They are not being savvy enough, judgmental enough and sceptical enough. The risk is that they are using the internet without full awareness of risk that they would have in any other walk of life. When you walk down the street, you are aware that there is a risk of bumping into somebody, being knocked over or slipping on a paving stone. We find that with the internet people are abrogating that sense of risk and not using their critical judgment, and that is a concern.

**Q140 Graham Stringer:** You were very clear in a previous answer that you believe the Government's focus should be on improving basic digital skills. Is there any way of quantifying the loss to the economy of parts of the population not having those basic skills?

***James Thickett***: Other organisations far better qualified than we are have done that analysis, so I would rather not venture a number. I know Rachel has done some work in this area.

***Rachel Neaman***: We have. We co-commissioned some research with the Tinder Foundation to look at the economic case for digital inclusion. We found that if we were to upskill the entire UK adult population, at a cost of £1.3 billion, over a 10-year period the net present value would be £14.3 billion, so there is an almost 1:10 benefit ratio in doing that.

**Graham Stringer:** Fascinating. Thank you.

**Q141 Carol Monaghan:** We know that children's use of particular devices such as tablets has increased greatly. Mr Thickett, what are parents' views of their children's use of media, and how might that impact on a child's digital skills?

***James Thickett***: First, it is a fallacy that there is a generation of children growing up who are complete experts on the internet. We find that children growing up with a smartphone—most 11-year-olds now own one[1]—use it for a very narrow number of

[1] The witness later clarified that half of 11-year-olds own a smartphone.

applications, so they are not really experts at all; they are amateurs, even though they are on it all the time.

Secondly, parents think their children know more about this stuff than they do. In the days when most children accessed the internet through a desktop or laptop it was relatively easy for parents to keep an eye on what they were doing. Typically, the computer would be in the living room or the kitchen and the parent would be able to supervise the child and use a number of intervention strategies, such as parental controls, talking to the child or setting rules, for example, about the amount of time. It is much, much harder to do that with the advent of smartphones and tablets where children are using them all over the house.

Our research has shown that parents are underplaying what their children are at risk of, and are being too lackadaisical. At the same time, children are not experts. The children we talk to in our research do not claim they know everything about it; they are finding their way as well. Parents need some support to be able to navigate this area because it is one where they feel that they do not know enough. That is why organisations like Media Smart and ParentPort, which Ofcom helped to set up with the Government, are important as a way of giving parents resources to be able to understand it.

**Q142 Carol Monaghan:** Sitting here just now, I am feeling slightly guilty as a parent. What you are saying is that the high use of these devices does not necessarily lead to high digital skills; in fact, it might be less so than it was in the past.

***James Thickett***: I will give you one example. Ten years ago, the application of the internet most used by children was educational content. Over the last 10 years, the amount of time children spend using educational content has not grown at all. Every other area—social networking, video games, YouTube videos and vlogging—has grown. In many ways the internet started out as an educational social tool to help children develop their life skills. It is now being used by children much more as an entertainment device and as something to pass the time—smartphones more than anything. Smartphones are a recent phenomenon. The first smartphone was in 2008. Smartphones have changed the game; 61% of 12 to 15-year-olds have a smartphone and it is changing the way they access the internet, and the time they spend on smartphones is generally not time spent doing other perhaps more worthwhile things.

**Q143 Carol Monaghan:** I have a feeling you are preaching to me. Maybe it is a lesson for many parents out there. Ms Neaman, can I ask about the increased use of this kind of tablet media? How can we use it to get children interested in computer science, which is where we want to be going?

***Rachel Neaman***: As my colleague just said, it depends on how tablets are used. If we want children to be interested in computer science, a much more technical interface is needed than a tablet. A tablet is a fantastic device to teach somebody the basics and to get people over the fear and lack of confidence when using a digital interface for the first time. It is the perfect thing for older people to use. It is a great thing for young children to use; they can swipe things without damaging anything and can get to grips with it, but if you are trying to get somebody to understand the principles of coding, programming and how a computer works, a tablet is probably not going to help them. The important thing is how

we define what we mean by digital skills, and whether we mean by that the technical issues of programming and coding, or whether we mean the skills and capability that will enable people to do the things they need to do in life, which may not be related to technical coding or programming.

**Q144 Matt Warman:** I want to come back to something you said earlier, Mr Thickett. You said we do not know whether they are using tablets rather than something more worthwhile. Do we have any evidence that the stuff kids do on mobile phones or tablets is less worthwhile than what they might otherwise be doing?

***James Thickett***: That is a very interesting question. One thing our research shows is that the amount of time children spend on these devices is going up; it has doubled in the last 10 years, but what they are doing less of is questionable. We know they are watching less TV, so there is a definite cannibalisation between the use of smartphones, tablets and computers and watching TV. We have seen that; it is very clear. At the same time, they are less likely to be watching BBC1 or BBC2 and more likely to be watching YouTube videos on their smartphones. We have seen a shift in audio-visual viewing away from what you might say is good audio-visual—high-quality content—to stuff you get on YouTube. As one of Ofcom's roles is to protect public service broadcasting, that is a concern for us.

Much more from a qualitative than a quantitative perspective, we find that it is more difficult for children to get bored; they use these devices to pass the time when they might otherwise just be bored or they might be kicking something around. When we look at surveys of what children are doing with their lives—we have something called Digital Day that we conduct every two years, which tracks people's digital lives across a 24-hour period, the whole 24 hours—it used to be the case that about a third of the time was spent watching TV, listening to the radio or being on the internet or phone. That amount of time is growing, and among children it is growing faster than for adults. They are doing more stuff in that area and less stuff in the traditional area. You could be correct: for some of that time they could be doing nothing, but we know they are doing less of things like watching television.

**Q145 Matt Warman:** Is it your suggestion that YouTube is inherently less worthwhile than BBC1? Is that a gut instinct or is it backed up with statistics?

***James Thickett***: We know that the two most popular uses of YouTube among children are short videos of babies biting their brothers or whatever—novelty videos—and, increasingly, vloggers. We are quite concerned about vloggers. A lot of them tend to be teenage kids who are selling or recommending products, for which they are paid by the manufacturers. From our research, a lot of younger children go to those videos and are not aware that they are commercial videos. They are doing it just because they think it is an interesting piece of editorial. It goes back to my point about the inability to tell the difference between editorial and advertising. That is a concern on YouTube, particularly with children. Parents do not really know it is going on. Parents are way behind in this area. We are worried that children are developing habits or developing a lack of critical understanding that they will take forward later in life.

**Q146 Matt Warman:** Moving on to the kids who are not watching YouTube, we spend a lot of time talking about the digital divide. How are we measuring that? What is the speed of progress in narrowing it?

***James Thickett***: The speed of traditional internet connections is slowing.[2] About 80% of households have an internet connection. About 86% are able to get the internet in other ways, and about 61% get it through a smartphone. About 15% of households consistently over time are what we call mobile-only households, so they do not have a fixed line.[3] They are increasingly difficult to get to. They tend to fall into three categories: students, younger people on low incomes, and older people, particularly those over 65. This is the digital divide. The reason these people are not on the internet varies. Some of it is about attitude to risk, particularly among older people; they are worried about being ripped off or scammed. Some of it is because they do not see any reason to do it; they can get by without having to go on the internet. Some of it is about cost, although cost is becoming increasingly less important. Some of it is about lifestyle; students and some young people on low incomes have a peripatetic lifestyle and are less likely to want to get a phone line or a proper connection where they live.

There is a variety of reasons. Today, 83% of households have access to superfast broadband and nearly half have access to 4G mobiles, so the infrastructure is coming along apace. No matter what people say, it is a pretty good story for the UK, but that does not always translate into take-up. There is a lag between getting the wires out there and getting people to take it up and use it. That lag needs to be recognised.

**Q147 Matt Warman:** My gut instinct is that the fact that students who have access to 4G are not paying line rental to BT has nothing to do with their inclination and digital literacy; it is that they do not need to. Are you saying my gut instinct is totally wrong?

***James Thickett***: I think you are right. They can access the internet in a number of ways and they are probably more savvy in some ways about how to get the best out of devices, but they tend to live in premises that do not have a BT line. Once you have a phone line going in it is much easier to get somebody to convert to get on to the internet, but 4G is now coming along apace. In our research we find that, on average, 4G speeds are now about 15 megabits per second, which is easily enough to do most things that people need to do on the internet. The question is not about connectivity and speed but about the devices people are using.

**Q148 Matt Warman:** It is much harder to get older generations and more deprived communities to become digitally literate. From the Go ON perspective, what is your assessment of the progress we have made over the past few years, and what more should we be doing?

***Rachel Neaman***: We are definitely making progress, but every year the bar is raised a little bit, because the way digital and the internet are being used changes. The baseline of what we consider the bottom line benchmark skills shifts. It comes back to the point that

[2] The witness later clarified it is the speed of take-up of traditional internet connections that is slowing.
[3] The witness later clarified it is these households do not have a fixed broadband line.

there is no one reason why people are not using the internet and why they are not digitally enabled. We need to look at the barriers in a holistic way, rather than just focusing on one element. While investment in superfast broadband is great, it needs to be matched with investment in skills and the availability of devices and connectivity at an affordable price. The evidence shows that the core barriers preventing people going online are lack of skills, lack of connectivity and infrastructure and the cost of getting online, alongside not really understanding why they should—the motivation point.

**Q149 Matt Warman:** With one eye on the digital strategy and all that, what is the role for Government in solving the problem of what sounds like an increasingly entrenched digital divide, even if it is not necessarily widening?

***Rachel Neaman***: There needs to be as equal an investment in skills as there is in broadband infrastructure, because I do not think that rolling out one without the other is going to work. Then we will see huge strides, both economically and socially, which is hugely important. There needs to be greater co-ordination of digital strategy across Government rather than perhaps in individual departmental silos. We need to be clear about what that cross-Government strategy is. As part of that, the citizen needs to be seen as a single journey through life. How do Government interact with that citizen?

***James Thickett***: The Government cannot do this alone. It is also a responsibility of industry, business and a whole range of organisations—for instance, the BBC. They can play a huge role in doing this, whether it is through the ability to deliver stuff on the ground and the ability to spend money on marketing and persuading people, or whether it is in terms of our role, which is largely through research. Academics have a similar role. It is about being joined up and pointing in the right direction, rather than one organisation having oversight of the whole thing.

**Q150 Chair:** We have to move on to our next panel, the Ministers for schools and for digital strategy. Before we do, we will have one final quick-fire round. I am very struck by a point you made. You said it depends on how you define digital skills. We are expecting the digital strategy imminently. It should have come out already. From your perspective, how would you like to see digital skills defined within a digital strategy that needs to address what we all agree is a digital skills crisis in the UK?

***Rachel Neaman***: We have defined what we mean by basic digital skills, and there are five categories within that. It is not enough just to be able to use Facebook to communicate or to send an email. The five categories include tasks that we believe are the minimum people and organisations need today to improve their life chances and succeed in the digital age. Briefly, the five are managing information, communicating, transacting, problem-solving and creating.

***James Thickett***: I agree with all that. Our focus is that being skilled is not just about work; it is about being able to navigate your life, intermediated by digital. It is about managing your online activity and transactions online; it is about understanding how content is moderated, and the difference between an advertising message and an editorial; and it is about being able to judge the accuracy of content and knowing how it is funded. It is about

the things you would expect normal people to have a good understanding of in day-to-day life, but where they see the internet as something very different. It is about normalising it.

**Chair:** Thank you both very much. This has been a fascinating and very helpful contribution to our inquiry. We may have some follow-up questions before we publish. If we do, we will be in touch. Thank you very much for your time.

## Examination of Witnesses

Witnesses*:* **Mr Edward Vaizey MP,** Minister of State for Culture and the Digital Economy, Department for Culture, Media and Sport, and the Department for Business, Innovation and Skills, and **Nick Gibb MP,** Minister of State for Schools, Department for Education, gave evidence.

**Q151 Chair:** I welcome both Ministers to the table. Thank you for taking the time today. We are on a fairly tight schedule, as we are expecting votes quite shortly. We will be brief in our questions, and I implore you to be as brief as possible, within ministerial ambitions, in your answers. We have just had some very interesting evidence from James Thickett from Ofcom and Rachel Neaman from Go ON UK. They confirmed written evidence we received from techUK that said that the digital skills gap is costing the economy £2 billion a year; and 93% of companies say it is affecting operations and recruitment already.

In particular, Ms Neaman said that the skills gap can be seen all along the digital skills pipeline, from basic skills up to higher skills, and that the place to start is by mainstreaming digital skills alongside literacy and numeracy in schools, in apprenticeship frameworks and in higher education courses. She gave us some interesting figures. She said that upskilling the entire adult population would cost £1.3 billion and it would be a value to the economy of £14 billion, which is something for all of us to think about with the Budget coming up next week. They also said that the success of a future digital skills strategy would be in how you define digital skills. They said it is not just about coding; it is about making sure you include basic skills all the way up to higher levels, and not forgetting about the need to have critical engagement with online content in the mix somewhere. My first question must be to the digital skills Minister. How far have we got with the digital skills strategy? Will it address some of those questions, and when can we expect it to appear?

***Mr Vaizey***: We have written the digital skills strategy. When you can expect it to appear is anybody's guess. I thought we would publish it in February. It was in the famous Downing Street grid. It fell out of the Downing Street grid for reasons that I cannot fathom. If you were a theologian, you would have better ways of understanding how the Downing Street grid works. There is a rumour that it may appear in the Budget and there is a rumour that it may not appear in the Budget. Things like the local elections and purdah for the European referendum may stymie it as well, but as far as I am concerned it is ready to go.

**Q152 Chair:** Could you answer some of the questions I raised about mainstreaming and the issues about the definition of digital skills?

***Mr Vaizey***: There are four themes in the digital skills strategy. The first, which underpins it—think of the terrible logo the BBC now has for BBC3 where there is a line about digital infrastructure at the bottom—is about building the digital infrastructure we need for the UK. I know Mr Warman has strong views on that. The broadband roll-out and mobile roll-out are going very well, but we need to move up a gear to a gigabit Britain, which I want to do over the next five to 10 years. The three pillars on that base are, first, supporting the tech economy. How do we build on the progress we have already made in making the UK one of the best places in the world to start a tech company? Clearly, that includes a skills aspect. How do we start to ensure we have the courses, both in schools but also in further and higher education, and the relationship between business and education, which I think digital now makes imperative, because it changes so quickly, to give people the skills they need to work in the tech economy?

The second section is about the digital transformations we need to see in key public policy areas, with education and health being the most obvious and prominent. The third pillar is digital government. How do we push on with what has already been a very successful programme over five years to make Government's relationship with citizens a more digital one? Those are the main themes of the digital strategy.

**Q153 Chair:** A particular comment that came out was that investment in broadband and 4G—the infrastructure you have just mentioned—needs to be matched by investment in digital skills. I think £450 million has been committed to the Government Digital Service. Will some of that be allocated to delivery of the digital strategy? Will there be funding attached to the digital strategy? How will the funding work?

***Mr Vaizey***: I have not seen any particular new funding attached to the digital strategy; that will probably have to come through the Budget or the spending review in the autumn. The digital strategy is looking at the aspirations for the next 10 years. We want to achieve what is realistic and what we can focus on in education and health. Transport is another issue. You may have seen the story that appeared over the weekend about driverless lorries. It is important to emphasise that there is a lot of funding going into innovation, whether it is smart cities, driverless cars, 5G research and so on.

There is investment going on in skills, whether it is particular investment in digital inclusion, where we have invested £36 million in separate programmes, or other elements of investment: £40 million in data courses and £20 million in Q-Step, which is a programme working with 15 universities on data analysis. There are particular packets of funding for certain aspects of digital policy, whether skills, research into future technologies or, say, the fiscal climate for tech start-ups, but at the moment there is no particular funding package allocated to the digital strategy. That will emerge either in the Budget or in the spending review later in the year.

**Q154 Chair:** Could I ask the Minister for Schools how you respond to the call essentially for the mainstreaming of digital skills and elevating digital skills to the same importance as literacy and numeracy in school education and in apprenticeships and higher education? Is this a demand that you recognise from the figures we have been hearing?

***Nick Gibb***: It is, and it is one of the reasons we took the decision in 2012 to disapply the old ICT curriculum and replace it with computing throughout all four key stages. It is one of only five subjects in the school curriculum that is compulsory from the age of five through to the age of 16, including English, maths and PE. I think that demonstrates the importance we attach to digital skills. The fourth one is science.

**Q155 Matt Warman:** We would all like to see digital, on the one hand, embedded in every single Department and, on the other, joined up in a coherent central Government strategy. Can you enlighten us on how Government think about digital? Is it a separate thing within each Department, so we can say how much Department X, Y or Z is spending on digital, or is digital simply a tool we all now expect everyone to be using as much as possible?

***Mr Vaizey***: It is complicated. To a certain extent, DCMS has established itself as the digital Department. We now have the digital economy unit within DCMS; it used to be jointly with BIS, but it is now wholly in DCMS. We have taken on some additional policy responsibilities that I think link closely with the wider digital agenda, such as data protection. I am also a joint BIS Minister. Although Nick Boles is the Skills Minister, we work very closely together on the digital skills agenda, so there is an element of coherence.

If you look across the silos of Government, there are two different joining-ups that need to take place. One is the link between BIS, DCMS and the Cabinet Office on the top-level digital stuff—digital in business, digital infrastructure and the tech investment environment— and the Government Digital Service, which is the Cabinet Office. Then there is the trickier task of the cross-Government Departments. Education will have a big focus on digital learning; Health will have a big focus on how you make the health service more digital so you can treat patients in the home; Transport will have a huge focus on digital both in terms of making the trains run better through to mobile on trains and driverless cars, which I have already referenced; and Energy in terms of smart meters. It is in almost any Department. We need to think hard about how we join that up.

We have a digital taskforce that brings Ministers together to get the issues on the agenda and move it into the centre, if it needs a push, but we have to think about whether we need central expertise that can help particular Departments with specific digital projects that they may want to make happen. Should those be happening in separate silos?

**Q156 Matt Warman:** Does that mean that DCMS is the lead Department for the digital strategy, working closely with the Cabinet Office, or is it not sensible to think of it as one Department in charge?

***Mr Vaizey***: DCMS is the lead Department on digital strategy, but we work closely with the Cabinet Office, which takes a big chunk because of the Government Digital Service. In terms of the lead Department on digital strategy and how it impacts on separate policy areas, whether it is education, transport, health or energy, we have been the convenor more than the leader. We have worked with Ministers in those Departments on the digital strategy, but we have been the lead Department in pulling together the digital strategy, with Treasury oversight.

**Q157 Matt Warman:** There is also an industrial economy strategy. Is the digital strategy going to replace some aspects of that, or are they two separate things?

***Mr Vaizey***: They are technically two separate things. There is also an innovation strategy, which may well emerge in the Budget, and it will be interesting to see how that works with our digital strategy as well.

**Q158 Matt Warman:** Does it feel to you as if this is lined up and co-ordinated in the way that you would perhaps start it if you had a blank piece of paper, or is it that something that has emerged as digital has become a more important part of every Department?

***Mr Vaizey***: It does not feel lined up. We are on a journey, and we need to take a step back and think very hard about how we line it up in the next six to 12 months. There is a great opportunity for Government to co-ordinate a great deal of work. We have achieved a great deal. We are seen as a very digital-friendly Government, certainly in terms of our status in Europe and the digital single market. We are seen as one of the leading nations to which the Commission will turn for advice, and it will take our views quite seriously in how we look forward to digital. But because it is such a fast-changing landscape—if that is not too weird a metaphor—we need to take a step back and think how we join all this up together.

Having said that, within that statement there is an element of contradiction, because we live in a digital economy; we live in a digital environment. To say you can have a single digital strategy and perhaps a leading digital Department immediately begs the question: what happens when everything is digital? You will still have an Education Department, a Transport Department and so on. It is a complicated thing, but I think Government need to reflect and refresh as we go forward.

**Q159 Chris Green:** The Government propose to achieve a target of 3 million new apprenticeships by 2020. How will this affect the skills gap, in particular in the digital sector?

***Mr Vaizey***: We have a very ambitious target for apprenticeships. I am a strong advocate for our apprenticeship strategy. Apprenticeships have come out of the wilderness, if you like, and are now seen as very much a mainstream education opportunity for young people, and I think that is quite right. From my constituency perspective, with a science base like Harwell, over quite a few years I have seen the huge opportunities that apprenticeships provide for young people in my constituency. To me, they feel like lottery winners. They do a four-year course where they are paid, and they come out with skills that are in huge demand and they have a great opportunity to work for a variety of very interesting employers. I am very pleased with the apprenticeship strategy.

We are focusing on digital apprenticeships as well. We call them reformed apprenticeships. We have 17 digital standards we are working through at the moment and we have already achieved three. I think we have 90,000 people doing digital apprenticeships, which is an increase of more than 50% over the last five years. We want to make sure that those digital apprenticeships are fit for purpose and have proper standards so that those apprentices can get jobs in the workforce when they leave.

**Q160 Chris Green:** Do you have a sense from the tech industry that they are happy with the progress and the numbers, or are they calling out for more people to come into the sector?

***Mr Vaizey***: I think they are happy. I am engaged with some of the bigger tech companies, particularly over the apprenticeship levy and the ones that are likely to pay it. More and more tech companies are focused on apprenticeships as a way forward. We have also introduced a degree apprenticeship. We have 300 people in the first year of the degree apprenticeship. We thought we could achieve 150 in the first year. There are nine universities and 40 employers engaged in that. Particularly in tech, and perhaps the STEM subjects in general, there is a feeling that you have to have a relationship with an employer to gain the kind of skills you will need in the workforce because they change so rapidly. That is why I think tech employers in particular are very pro apprenticeships. They realise they can get the best of both worlds: they get the education their young people need, and the relationship with what they are doing in day-to-day work means that the skills they have when they come into the workforce full-time will be up to date and appropriate.

**Q161 Chris Green:** Talking to parents and children thinking about what course to go on and what path to take, I get the general sense that there is still not enough awareness about apprenticeships, or certainly not enough confidence that they are a good option for high-performing people, and if you want to do something that will really test you, you go to university. Is that perception changing in society now? How widely known and understood is the degree apprenticeship?

***Mr Vaizey***: Degree apprenticeships are just starting but, as they get under way, more and more employers will start going out to the recruitment pool, which starts in school, and saying, "This is a potential route for you to a very fulfilling career." Apprenticeships are moving up the agenda, but even though the Government have focused on them for the past three or four years, it takes time to change a cultural perception.

I mention in passing the university technical colleges, on which Nick may have views. They are helping to change that perception. One has just opened in Didcot in my constituency. It was massively over-subscribed. It is an appealing route for education, but I accept that it will take a number of years to equalise, because for the last 20 or 30 years it has all been about getting people to go to university. The change back to the apprenticeship route as a way forward into a very fulfilling career has been focused on for only the past three or four years. It will take time to change some rooted perceptions.

**Q162 Chris Green:** Someone in my constituency is working in a very high-tech field. She is studying for her degree, and, when she passes that, the expectation is that she will go on to a masters. She was told by someone close to her, "If only you had gone to university it would have been so much better for you than the apprenticeship route." Improvement in understanding is incredibly important. Is there sufficient integration between people studying for computer science degrees and employers, because we need the real experience you can get by visiting and working with a company?

***Mr Vaizey***: That is partly what the degree apprenticeships are designed to do. We are trying to make it more porous between the employer and the higher education institution

so that people come into the world of work with the right skills. Research and analysis show, bizarrely, that computer science degrees have a very high rate of unemployment, which is completely counter-intuitive. One of the reasons is that, although you might learn the academic aspects of computer science, you are not given the tools at university to apply them in the real world. We want to break down the barriers between employers and universities. That was why we commissioned, for example, the Shadbolt review to look at how to make computer science courses more fit for purpose in universities, and it was why we had the Skills Funding Agency review of further education, which reported last month. We will look carefully at its recommendations and take them forward. For example, it talks about the language used in describing courses, making sure there is a common language so that people know what skills they are going to pick up. We have to be absolutely ruthless with courses offered by further and higher education in terms of the skills they are giving our young people, and that is what we intend to do. The Wakeham review will also look at the wider STEM courses in higher education, but we need employers to work with us to make sure that universities and colleges are providing the kind of courses people need.

**Q163 Chris Green:** Do you see a radical change in the near future, with a very substantial shift towards the apprenticeship side from traditional university courses?

***Mr Vaizey***: I expect to see a shift towards apprenticeships anyway because we have a very stretching target of 3 million apprentices across the piece. I hope we will see a shift in the next two years in further and higher education in terms of the quality of courses being offered.

**Q164 Chair:** Minister, I think I misunderstood you. You said that the digital skills strategy was written, but then you said you were still considering the outcome of the Shadbolt review. Surely, the Shadbolt review would be taken into account in the digital strategy.

***Mr Vaizey***: That is a fair point. I will take that back with me. As we are not publishing the digital strategy I will make sure the Shadbolt review is incorporated in it.

**Chair:** Excellent. I am glad we were able to help.

***Mr Vaizey***: That is what I come here for.

**Q165 Chair:** We look forward to seeing that evidence. There is one further point I want to ask about. I think I have asked you about it before. We are intent on raising the importance of digital skills up to the level of numeracy and literacy and, as I understand it, most apprenticeship frameworks include a requirement for English and maths, but they do not include a requirement for digital skills across all sectors. Is there any intention to start mainstreaming digital skills in the apprenticeship frameworks, because most employers we have spoken to seem to feel that going forward this will be necessary?

***Mr Vaizey***: There is that intention. I have spoken to Nick Boles about that. We want to ensure that apprenticeships going forward have an element of digital skills exactly on the basis you put it: basic literacy, basic English, basic maths and basic digital skills.

**Q166 Victoria Borwick:** To take us back to schooling, the GCSE ICT et al, my understanding is that in 2015, more than 110,000 students studied the GCSE ICT, compared with only 35,000 studying computer science. However, in response to the DFE's consultation, 35% favoured keeping the ICT compared with 39% who supported the new computing curriculum. You briefly talked earlier about its importance and the difference between the two. Perhaps you can tell us a little more about the Government's rationale for scrapping the ICT rather than changing or reforming the subject.

***Nick Gibb***: This is part of a broader reform of GCSEs and A-levels across all subjects. We want to raise the academic rigour of all the subjects so that our public qualifications are on a par with the most successful education countries in the world. It is a hugely important objective for our country's long-term future and the future of the individuals concerned.

**Q167 Victoria Borwick:** I am sure they are doing that through the ICT route.

***Nick Gibb***: I am sure they are doing extremely well. All the qualifications that young people have been taking in the past require a huge amount of work, but we have to keep pace with changes happening in other countries. The whole education world internationally is not standing still. We have to make sure that ours keeps pace with the most successful countries. That is what the reforms are all about. That is one key set of principles they have to adhere to.

The second is that there is no overlap between different qualifications. Quite a number of A-levels and GCSEs have not gone forward to being reformed. We took a lot of time over the decision about the ICT curriculum. As I told the Chair earlier, we disapplied the ICT curriculum at pre-GCSE. The national curriculum is now a computer curriculum and there are far more skills in it than simply teaching children how to use existing applications. It is all about coding and understanding digital literacy and how computers operate.

**Q168 Victoria Borwick:** Who are your key players in designing that revised curriculum?

***Nick Gibb***: The British Computer Society and the Royal Academy of Engineering were both involved in that process. It was a very difficult decision. We drafted what a new reformed GCSE ICT would look like. In the end, we took the decision that we would have only one qualification in this area because we did not want people not to take the computer science GCSE and A-level. We want as many of our young people to take that as possible. There are a lot of technical and professional qualifications for young people who do not want to take computer science but want to continue to develop their digital skills. Given that we are teaching this from the age of five right through to 16, regardless of whether you take the computer science GCSE, that is 11 or 12 years of being involved in this particular subject, so the skills we want school leavers to have should have been acquired in those years of study.

**Q169 Victoria Borwick:** Concerns have been raised that there are not enough computer science teachers and that most of the existing ICT teachers are not necessarily sufficiently skilled or qualified to deliver the new computing curriculum. Do you have a view on that?

***Nick Gibb***: It is a very challenging new curriculum to deliver, so we have invested about £4.5 million over three years to help teachers acquire those new skills. One particular project is called the network of teaching excellence. This establishes a cadre of 300 master teachers who go out into the school system and cascade their skills down to other teachers. That is a very important part of upskilling the teaching profession in being able to deliver this more demanding national curriculum subject.

**Q170 Victoria Borwick:** I want to ask about the core subjects as far as Ofsted is concerned. Obviously, it does not necessarily look at all subjects. Should Ofsted start to measure the use of technology in schools as a formal performance measure?

***Nick Gibb***: It is important not to go back to the days when Ofsted had 27 objectives to measure. What happened then was that the core academic function of schools was only a very tiny proportion of what they were inspecting. It is important that Ofsted ensures schools have a broad and balanced curriculum. That will include computing. They will look at the equipment the school has in relation to how it delivers the computing curriculum.

**Q171 Victoria Borwick:** From what we heard in an earlier session, it is not just the equipment people have; it is what they do with it. That is one of the key lessons we learned today. Just to have the equipment does not necessarily mean they are acquiring the right skills on it.

***Nick Gibb***: I totally agree with that, but when Ofsted are inspecting a school—it is not a long process; an inspection takes two days—they look at the curriculum as a whole. They want to make sure the school is offering and delivering a high-quality broad and balanced curriculum. They look right across the national curriculum subjects to see whether or not the school is offering a high-quality standard of education.

**Q172 Victoria Borwick:** Is it your view that, in terms of recommendations about digital skills in the UK economy, computing should be a core subject?

***Nick Gibb***: It is a core subject in the sense that it is a national curriculum subject from five to 16. There are only five subjects in that category out of all the school subjects—maths, English, science, PE and now computing. In that sense it is a core subject in our schools.

**Q173 Carol Monaghan:** Can I ask a little more about this subject? I am not an expert on the English education system, but I have been hearing a lot about the EBacc and I am looking at its science section. There are three bullet points and only one of them mentions computer science. Is there a case for having computer science considered as a main science along with physics, chemistry and biology?

***Nick Gibb***: Yes, there is, and it is. There are two ways of fulfilling the science pillar of the EBacc. One is to be entered for three of the four sciences: chemistry, physics, biology and computer science. You have to be entered for three out of four of those, and you have to

gain a grade C in at least two of them. That is one way of delivering it. The other is to take the double award science.

**Q174 Carol Monaghan:** The other two ways I am looking at on the Government's website do not mention computer science as the science pillar of EBacc.

***Nick Gibb***: I do not know what website you are looking at, but I can tell you that computer science was added to the science pillar in 2013, I think, and we have seen a growth in the numbers since then. In 2013, 4,000 young people took the computer science GCSE. That rose in 2014 to 15,700, and last year it was 33,000. I expect to see it grow further in the future.

**Q175 Carol Monaghan:** This is a Department for Education paper updated on 12 February 2016. *[Interruption.]* I am saved by the bell.

***Nick Gibb***: I will take a look at that, but I can absolutely assure you that computer science is a subject that can help you get the science element of the EBacc qualification by a combination of GCSEs. In answer to Victoria Borwick's question, that is another reason why it is at the core of the school curriculum; it is a fundamental part of the EBacc.

**Chair:** As we have several votes, we are going to adjourn the session now, but we may have some follow-up questions that we will write to you about in order to make sure we have the fullest possible evidence from both Departments, which I am sure you would want to see reflected in our final report. I bring this session to a close.