

Education Committee

Oral evidence: [Fourth Industrial Revolution](#), HC 1007

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Members present: Robert Halfon (Chair); Ben Bradley; Marion Fellows; Emma Hardy; Ian Mearns; Lucy Powell.

Questions 189 - 265

Witness

I: Andreas Schleicher, Director for Education and Skills and Special Adviser on Education Policy to the Secretary-General at the Organisation for Economic Co-operation and Development (OECD).

Examination of Witness

Witness: Andreas Schleicher.

Q189 **Chair:** Good morning. Thank you very much for coming today. Sorry for the short wait. For the benefit of the tape, could you kindly introduce yourself and your title?

Andreas Schleicher: I am Andreas Schleicher, director for education and skills at the OECD.

Q190 **Chair:** Thank you. Could I ask you how well you think Britain's education system is prepared for the forthcoming fourth industrial revolution?

Andreas Schleicher: It is a difficult question to answer. When we look at one metric, which would be digital skills in the workforce, we can see that, among older generations, the UK fares fairly well. If you look at 55 to 64-year-olds in our PIAAC tests on digital skills, people came up very well. When you look at the younger cohort moving into the workforce, it is probably at the lower end. In terms of 16 to 24-year-olds, if you look at their digital skills, they fare clearly not as well. I should actually frame it differently. They do better than older ones but, if you look at this in relative terms across countries, you can see that the UK is much better positioned among older generations than among younger ones.

Q191 **Chair:** Right, but what you are saying is that the younger generation is not prepared.

Andreas Schleicher: Saying "prepared" is putting a normative statement around it. It is clearly less well prepared than other nations.

Q192 **Chair:** What deficiencies do you recognise in the British education system in terms of preparing for the fourth industrial revolution and skills?

Andreas Schleicher: There are several things. When we look, for example, at the types of tasks students are most familiar with, in mathematics lessons, for example, memorisation is still a predominant learning strategy. Whereas British students are using learning strategies that are more associated with the fourth industrial revolution, like elaboration strategies, being able to think critically and so on, those strategies are less prevalent in classrooms and that could be used as an indicator.

You can say that, on average, the UK comes out okay. It is an average performer in mathematics, for example, but when you look at the type of tasks that British students are doing better, they are more associated with the past than the future. The kinds of things that are easy to teach and easy to test are precisely those things that are easy to digitise. That is basically what we are losing. Labour markets see a decline in the demand for routine cognitive skills and an increase in the demand for non-routine analytic skills. That is where we see, relatively speaking, the greatest weaknesses in UK schools. This is at age 15, I should say. That is basically the age group that we studied.



Q193 **Chair:** In some of your work, you have talked about Finland as being an exemplary country in some ways. What countries do you think, in terms of their education curriculum, syllabus and what they are doing, are best preparing themselves for the fourth industrial revolution, and why?

Andreas Schleicher: I would probably look to countries like Singapore. I might look at Shanghai in China. In Europe, Finland would be an example, but the Netherlands and Estonia would be other examples. In North America, you could look to Canada. They are countries that are quite well prepared. There are several things that make them stand out. First, there is strong student performance in the types of tasks that you would associate with the fourth industrial revolution: basically the capacity to manage complex information, the capacity to navigate ambiguity, the capacity to not only do mathematics but think like a mathematician or scientist. On the types of tasks we would associate with the fourth industrial revolution, those countries are doing very well. Singapore is a top performer on problem-solving skills, for example.

Q194 **Chair:** Give practical examples of what these countries are doing that we are not, which are happening in their schooling and college education system, pre and post 16.

Andreas Schleicher: First, in the schooling system, they place greater emphasis on those types of tasks. Students have more time to apply knowledge; they are not just learning things but are more exposed to the application of knowledge. Another important factor is that those countries are much better in getting all the students to succeed. In the fourth industrial revolution, do not underestimate that, because the fourth industrial revolution effectively amplifies the impact of skill differences. Those who are better skilled have a huge advantage. Those who are poorly skilled face a huge disadvantage. The success of those education systems in getting everybody to do well is a big advantage in the fourth industrial revolution.

That is a common characteristic among the countries that I cited. If you look at classrooms—this is not true for Finland, but certainly is for the east Asians—they give teachers larger classes than in the UK, but they give them a lot more time for other things than teaching than in the UK. Teachers spend more time with individual students and more time learning themselves, because the fourth industrial revolution is also about teachers investing in continued learning. In Singapore, you would see 100 hours per year and, in Shanghai, 240 hours. There is significantly greater investment in the professionalisation of their staff. That is clearly a differentiator. In terms of learning environments, they would put at the centre of what they teach what students should be able to do, not just what they should know. Those are big, important differences.

Q195 **Chair:** I have read a lot of your articles and have a lot of sympathy for what you are saying but, in an article you wrote for *The Hill*, an American website, you said, “The future will be about pairing the artificial intelligence of computers with the cognitive, social and emotional



capabilities of humans". "Tomorrow's schools need to help students think for themselves and join others in work and citizenship". I agree with all that, but that the backlash from the knowledge side of the argument and those who believe in the traditional teaching of knowledge will be to ask what on earth that means.

What does it mean in practice? What does the syllabus mean in practice? They would say that a lot of that sounds very nice, but very woolly. I know you are starting to develop it in this document, but what does a curriculum fit for the 21st century mean? What do you mean by that in practice, to show that it would not mean a diminution of standards but there are substantive things that pupils and students would learn at all ages? How would you respond to that? This is from someone, by the way, who has a lot of sympathy with your work.

Andreas Schleicher: First, behind that simple sentence is a lot of data. Why do we say, for example, that social skills are rising in importance? If you look at labour utilisation, and this is true for England, those tasks are rising most significantly in labour demand. Basically, there is a decline in routine cognitive skills. There is an increase in non-routine analytic skills, but the steepest increase is in non-routine interactive skills. That is what people often do not have in the picture.

You ask me, "How do those countries teach them?" In a Japanese classroom, you would have a lot more interaction among students. Teachers would not teach 16 or 17 maths problem in an hour but one. Students would be working on solution strategies as opposed to finding out what the right answer is. They would compare and contrast those solution strategies. There is a lot of emphasis on the social dimension of the classroom. Students would cook the meal with their teacher. They would clean the classroom with their teacher. In fact, the social skill dimension is deeply embedded in almost anything that you would see in the classroom. That is a concrete example.

In Finland, you would find a lot of learning happening across the boundaries of disciplines. Students learn to look at a problem from different angles, to think about a problem like a philosopher, a scientist or a mathematician as opposed to working within the silo of a discipline. There is that cross-disciplinary learning.

Singapore is doing something similar. It is a very interesting example. In the UK you would put the academic discipline at the centre and then say character and social skills are moulded around that. In Singapore, it is the opposite. They would put those qualities at the centre and then build the academic disciplines around them. If you teach sports, for example, you would have to ask yourself every day, "To what extent do I contribute to helping students take responsibility for themselves, take responsibility for others, and develop courage, leadership skills and so on?" It is a very explicit way of framing the curriculum.



Interestingly, in your question, you suggested that these might be opposing ends on a spectrum: here is knowledge and here is how we use knowledge. In fact, those countries are all doing better on knowledge than the UK does. We see in our data that learning to apply knowledge and develop epistemic understanding of the subject is a very, very good way to deepen knowledge.

You asked me also what distinguishes them. They would teach a lot less in much greater depth. Again, you focus on one problem in a lesson. You learn perhaps less surface content, but you develop a much deeper conceptual understanding of the subject. I will give you one interesting example. For us, in the middle of the financial crisis of 2008, everybody said that students should be doing better in financial literacy, so we should focus more on financial education. The UK was at the forefront of this, putting a lot of financial education on top of the curriculum.

Then we tested that in PISA and we found no correlation between the intensity of financial education and financial literacy. The students who came out on top of that were the students in Shanghai. They had never heard about financial education, but they understood the underlying concepts. They knew what probability really means. They knew what the nature of an exponential function is and so on. They could extrapolate from that and apply it in a new context. It is about learning fewer things at greater depth. Perhaps this is a bit exaggerated, but in the UK the curriculum is very wide and quite shallow. You would see in those systems more emphasis on deepening understanding and teaching less content.

Q196 Chair: I am asking the question as if I was a parent: if a parent wants to know what their child is going to be taught at school, if they hear that they are going to be taught a more character-based education, it will be hard for them to understand necessarily what exactly their child is going to be taught. Because everything is so structured now, it is a lot easier for them to understand. Whether it is right or wrong is a different question. How do you frame it in a way that parents can understand what their children are being taught?

Andreas Schleicher: That is one of the biggest challenges that the fourth industrial revolution poses to us, namely that, as parents, we will have to accept that our children learn things that we may no longer understand, and that our children no longer learn things that were very important for us. That is a real dilemma that we see in many systems.

Q197 Chair: Is the big exam system we have in our country—the GCSE system, and then narrowing it down to A-levels—the wrong approach in terms of preparing our students for the future?

Andreas Schleicher: I am in two minds about this. High-stakes exams are very important in education. You find them in most successful education systems, because they give clear signals of what is important. They tell students, "Invest your energy." As you say, it is very important



to get those signals right. If those signals are not aligned with what is being taught in instruction, the exam always wins.

Q198 **Chair:** Here, we make students do a number of exams at 16, but then narrow it down to just three until 18. Do you think that is the right approach or the wrong approach?

Andreas Schleicher: Again, in the fourth industrial revolution and the future, your capacity to think about problems from multiple angles is probably of growing importance. In narrowing things down too early, you will pay a price for this in the capacity of students to think about problems from multiple angles. There are different philosophies, and it is not so clear. We do not have clear evidence to say one is better than the other. We have countries with very broad exam systems, with 12 or 13 subjects. You are on one extreme with the A-levels, and then there are countries looking for a broader range.

My guess would be that, in the fourth industrial revolution, the capacity of students to think divergently and question knowledge—the more angles you have, the more perspectives you can take—will be a big advantage; it is today. One thing we should not underestimate is that, when you think about artificial intelligence, it is becoming very, very powerful. The challenge for education is not to develop second-class robots but to focus on those skills where humans have an advantage, which is perspective-taking, looking at problems from multiple angles and making judgments. They need to retain their value. The fact that they do not get recognised in exam systems means that teachers often take them as a nice-to-have, except your private schools. If you look at the big differentiator here, they are largely about those kinds of 21st century skills. It is all about character development.

Q199 **Ben Bradley:** It is interesting, reading through lots of what you have written in previous publications. I absolutely agree, as Rob said, with the approach and your thoughts on our system. It is interesting, what you just said, talking about curriculum changes and the nature of what we teach. Previously, in other sessions, we have heard a lot about the technology and people suggesting there needs to be a big investment in the classroom in terms of the tech that exists there. That is not something you have prioritised in what you have said so far. Is the curriculum element more important, or do we need this big financial investment in technology in schools?

Andreas Schleicher: It is a very interesting question. The reason I do not talk very much about tech is because our evidence is very mixed. I could give you as many examples of technology doing more damage than good as I could the other way round. The question is always whether this is a problem of technology or a problem of how we deploy technology. On the one hand, you can say technology enables students to access the world's knowledge rather than an old text book. It enables them to learn co-operatively. It enables teachers to become embedded in knowledge networks. There is huge potential in technology.



But, when you look at the incidence and intensity of technology and how it relates to learning outcomes, it is like a curve. In the case of the UK, you are already beyond the tipping point of the curve, in that technology intensity is currently not predicting better outcomes. That may change when we become better at technology use. At the moment, I am really quite careful. At the OECD, in a way, we are quite conservative, in the sense that we only talk about things for which we have compelling evidence, and this is an area in which I would be quite cautious.

Q200 Ben Bradley: There are, as you say, different uses and different outcomes. Are there examples where people are using it well? It sounds like, from what you are saying there, the difference might be the training and support for teachers to be able to use it properly.

Andreas Schleicher: The best examples we find are where technology is not necessarily used in the classroom but to connect teachers. I will give you an example. In Shanghai, they have a digital platform where teachers can upload projects, lesson plans and so on. They combine that with the reputational metric, so the more other teachers download, criticise and improve your lessons, the more status you get in the system. It is something that encourages people to share, mobilise knowledge and so on. That is a very powerful use of technology where I can see no negative downsides. At the same time, if you go to classrooms in Shanghai, technology is deployed very judiciously.

I will give you another example here. In November, I was in a school where they taught calligraphy. You think calligraphy has nothing to do with technology, but every student had a scanner under their paper. While they were drawing, there was a tablet next to them that was giving them individualised real-time feedback on how accurately they were drawing things. Only when they were happy, they pressed the button and sent it to the teacher. After the lesson, the teacher went to the next classroom and said, "Let us have a look at the results". He could see common patterns and misconceptions, all of which told him how to improve lessons. So there are good ways. On the other hand, if you have students in the classroom copying and pasting things from Google, you will get worse outcomes than with traditional teaching. You should not underestimate that modern pedagogy is not about technology. In fact, teacher-directed instruction can be very powerful.

Q201 Ben Bradley: We have heard in previous evidence about the level of educational technology companies in the UK. Quite a proportion of those organisations are based in the UK, but we do not seem to get the same use out of them. They have said the same thing in terms of the way to utilise that technology. What do you think the barrier is to that? Is it a political barrier, as Rob touched on—that we simply focus in Government and in the DfE on academic attainment and we have a system that pushes kids to go through A-levels and university? Are there other places that have more choice? One of the things I am interested in is choice in education, in terms of whether you take a vocational or academic route,



and when you start to do that. Are other countries introducing that choice into the system or do they have that very different approach to education overall?

Andreas Schleicher: It is an interesting question. We do not see, in high-performing systems, necessarily more choice, but we see probably greater capacity in the system, and certainly in classrooms, for teachers to understand how students learn differently. This concept of mastery learning is very dominant in most high-performing systems, in the sense that you set quite similar goals for students but you are very knowledgeable in how different students get there. You do not necessarily find more choice, including vocational education, but you find a lot more variability in how students learn in these schools.

Finland, for example, has about 30% of instruction delivered outside the classroom. There are lots of resources going into supporting students with special talents, special needs and things like this. It is not so much about curriculum variety as about how students actually learn. Vocational education in my country, Germany, for example, is not so much a different subject but a different style of learning. You learn in a more applied setting but the curriculum is remarkably similar. You learn the same maths, but you learn it in a setting that is very different from traditional classrooms. That kind of flexibility can be healthy.

Q202 **Chair:** You have so many more vocational students. Is it 70% of your pupils who go off to do vocational?

Andreas Schleicher: Yes.

Chair: That is so different. The culture is so different.

Andreas Schleicher: When you talk about vocational education here in the UK, you associate it with people who learn things with their hands, apply them and work in a factory later on. That is not what you would see in Germany. Many of them become CEOs, administrators or bank people. It is more of a different style of learning, where some of the learning takes place in the workplace, some in a school-based setting, but the curriculum is not that different from what you would offer in academic education. That is a really important point.

Q203 **Ian Mearns:** I think we have gone away from that system. To a large extent, we had that system. I come across people, particularly in small and medium-sized enterprises in engineering, who started off on the shop floor as apprentices but who are now middle managers, managers or even owners of companies. There has been a culture of people starting off on the shop floor and progressing up through the profession, but I am not sure. Have we have lost that to a certain extent in Britain?

Andreas Schleicher: Your qualification system is not very conducive to that form of skill development. In fact, you have very powerful degree structures. In a sense, if you do not get a university degree, it is very hard to be recognised for your skills. You can see this, by the way, in the data from our PIAAC survey. When you look at the skills value of



degrees, there is huge variability. You take people with a university degree and people without, and the skills distribution is like this: there is a lot of overlap. It is a matter of your qualification systems becoming more granular and more reflective of actual learning and skills, rather than formal attainment.

Q204 Lucy Powell: Thanks, Andreas. It is good to see you again and, like others, I share a lot of your analysis. We are trying to get this into a report that gives some clear recommendations to Government and others about how we might reflect your evidence base better in our system. Can I take you to some aspects of our curriculum and our testing system, which you have touched on already? I am also a parent of a 14-year-old going through this at the moment. To my mind, there are three or four different areas. I want to slightly unpick those, if I may.

First, you were talking about an overreliance on knowledge memory, particularly memorising. Another theme was that it is too broad; there is too much content, so the depth is not sufficient. I am wondering how these different things play into each other. Maybe one is around what we have heard already in this inquiry: although it is broad and not deep enough, there is a narrowing, so there are fewer subjects that students are able to take. There is a dropping-off of design, technology, art and creativity. We have not really touched on creativity in the fourth industrial revolution. Would you say something about that mix and where you would like to see that balance redressed within our system, to equip us for the fourth industrial revolution?

Andreas Schleicher: When I say, "Teach fewer things at greater depth," I would not suggest teaching fewer subjects; it is within a subject. When you teach, for example, mathematics, focus on the foundations of the mathematical discipline. If students have a good understanding and can translate a real-world problem in the mathematical world, they can look up all the formulas and equations. In the fourth industrial revolution, art may become more important than maths.

We often talk about soft skills as being social and emotional skills, and hard skills as being science and maths, but it might be the opposite. The science and maths might become a lot softer in the future, where the relevance of knowledge evaporates very quickly, whereas the hard skills might be your curiosity, leadership, persistence and resilience. We need to be really, really cautious about how to design our curriculum for those kinds of needs. By the way, this is mirrored by statistics on skill utilisation and the views of employers. If you ask employers, they realise that balance is shifting and it will amplify when artificial intelligence really kicks in. Teaching fewer things at greater depth is not about having fewer subjects.

I will give you a concrete example. In Britain, why do you teach so much trigonometry in maths? Students learn that stuff. When you ask a mathematician whether this is the foundation of maths, they will say, "No, trigonometry is one specific application of maths." When you ask



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people in the workplace, "Do you need trigonometry?", they say, "No, I have never used it." The reason you teach it is that, 300 or 400 years ago, those were the techniques that you needed to measure the size of fields to construct your houses, but it has remained a relic in the curriculum because nobody touches what is in there. You get into a lot of trouble when you clean something out of the curriculum. Everybody is liked for adding something; nobody is liked for deleting something. That is basically what happened to the school curriculum. There is a lot of shallow content loaded on this. Teaching fewer things in greater depth means getting to the essentials of what a discipline is about and focusing on them.

Q205 Lucy Powell: Are you aware that, recently, that has got even bigger? The maths curriculum has got a third bigger. Is this the wrong direction? Not only is it wrong in itself, but we are going in the opposite direction to everybody else.

Andreas Schleicher: It is not just the curriculum. Writing the curriculum is quite easy; getting it implemented is the hard part. Your teachers have a lot less time for other things than teaching than teachers in most countries. Basically, the price for your smaller classes and average spending has meant that you drive out professional time other than instruction. You have more assistant teachers, psychologists and so on. You have tailored the work organisation to an extent that teaching is about delivery. Actually, if you think about teaching fewer things in greater depth, it requires a different culture of teaching. It requires teachers to know their students much better, to know how their students learn much better and to have the time to develop themselves. When the skillsets change, how do teachers know when things become less or more relevant?

There is, for example, a very interesting contrast. It is really about the implemented curriculum. When you ask British teachers what good instruction looks like, they will all tell you what we are talking about here: "Students learn best when I am a mentor and facilitator. Thinking and reasoning is more important than curriculum content." Ninety per cent. of British teachers argue along those lines. When you look at what happens in the classroom, there is almost a direct contrast. Britain comes out among the countries with the highest prevalence of memorisation techniques in the classroom when you ask students. There is a gap between what teachers aspire to and what is happening.

Q206 Lucy Powell: Do you think that is part of the testing regime and what the content of those tests are?

Andreas Schleicher: That is probably part of the explanation. Another part of the explanation is that teachers have very little exposure to their actual practices. They do not have the level of classroom observation that you find in Singapore or Finland. They do not have as many professional learning communities in schools, in a structured way. British teachers, according to our data, are quite collaborative in the sense that they



exchange information, work together and so on, but when it comes to deep professional collaboration, that is very limited.

Q207 **Lucy Powell:** There probably is that peer-to-peer, but it is more over exercise book reviews and marking, and maybe less on the pedagogy.

Andreas Schleicher: Yes. If you want to do that well, it needs to be a highly structured, professionally led process. It is not just putting a group of teachers in a room and saying, "Collaborate." In Singapore, for example, they would videotape lessons, analyse them and work together to frame what is better practice. In a way, curriculum implementation in the fourth industrial revolution requires a very, very strong profession, because you cannot do that top down. It is very easy to push new ideas into schools. It is actually very hard to get good ideas out of the classroom into the system.

Q208 **Lucy Powell:** That is really good. Finally on that, in terms of the exam system, you say it is good to have high accountability stakes. I would agree with you to some degree, but if there is so much teaching to the tests, and those tests themselves are high stakes and require memorisation of lots of poems, quotes in literature, mathematical formulas and so on that are irrelevant, does that drive behaviour in the wrong direction? Are we going in the wrong direction?

Andreas Schleicher: The stakes for students in testing are not that high, but the stakes for schools and teachers are high. It is the opposite that you should be aiming for. Make the stakes for students higher so they have a strong incentive to study hard and work. As soon as you start to make the stakes for teachers high, you get exactly that effect. That is basically universal. A country that is even more extreme on this is the United States. The testing regime has become very superficial, with multiple choice tests, because it has been closely aligned with teacher and school performance.

One facet that you should be aware of is that, when you look at the overall variability of student performance, less than one third lies between schools. That is where most of your policy is focused on. If you fix all of this, you will have only fixed 27% of the problem. The biggest issue is the huge variability of student performance within schools, even high-performing schools. That is something that you do not address with those high-stakes accountability measures. Again, raise the stakes for students.

Q209 **Lucy Powell:** How do you do that?

Andreas Schleicher: If results matter for students, if students get really good feedback out of this, it is important, because they invest their time and energy.

Q210 **Lucy Powell:** But we should make it less so for schools.



Andreas Schleicher: Yes, absolutely. Sometimes some countries have zero stakes for schools.

Q211 **Lucy Powell:** High-performing ones?

Andreas Schleicher: Yes. In Japan, schools get their results, but nobody would do a ranking of schools because they would say it is not really helping schools to do better.

Q212 **Chair:** Why is it not helping? Why do they say that?

Andreas Schleicher: Again, a lot of performance variability is within schools. The rankings are going to narrow your attention to quite minute differences, and much of this is conflated with background social factors that you cannot address anyway. If you want to do a ranking well, you have to do it in value-added terms, which you have tried here, but then you talk about a modest part of the overall problem. If you use your performance results to help students learn better and teachers teach better, you have a much greater potential impact on improvement. You see a lot less punitive use of assessment results, and it is more directed towards giving students and teachers really good feedback, real-time feedback and better feedback.

Q213 **Lucy Powell:** It is the idea that one year's maths results being down for a school means the school has to be academised and the head has to leave. That happens regularly here.

Andreas Schleicher: I can understand. You have given schools a lot of autonomy, so you need some kind of measurement, but you pay the price that it may then distort behaviour. It would call for an exam or assessment system that puts much more focus on those skills that are really valued. You often end up sacrificing validity gains for efficiency gains. You sacrifice relevance for reliability.

As soon as things become high stakes, you need to be very precise because it becomes contested. You have a Minister here who lost their job because of a claim of exam problems. That is happening. Everybody will put the focus on making sure you measure everything very reliably, and they lose focus on relevance, validity of assessments and the facets that may be harder to measure but are really, really important. That balance is crucial, because that sends very powerful signals to the frontline of students and teachers. In a world of technology, multiple choice tests do not have any place.

Lucy Powell: I agree with you about trigonometry as well. Having done maths for a lot of my life, I have to look that up. I agree with you on that.

Q214 **Ian Mearns:** The one thing I would ask from the outset is whether, from the OECD perspective, when you look at the UK, you recognise that there are differing education systems in different parts of the UK. We use the UK as a shorthand when we are mainly talking about England. Is your



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view of the UK a generalised view, or are there good bits and bad bits in the different Administrations?

Andreas Schleicher: It is always an interesting study for us, because you have a similar culture and social environment but still quite different results. If you compare Wales with England, Wales trails behind quite a bit. If you look at Scotland and England, it is also an interesting comparison. This is always the question for me. When I look at the intended curriculum in Scotland, it is quite well aligned with what we see in high-performing education systems. As for the implemented curriculum, it is easy to write a curriculum but harder to translate it into better instructional practice, and Scotland has a lot of work to do to address that. There are interesting differences between the countries in the UK.

Q215 **Ian Mearns:** When we look at England specifically, and Lucy has touched on this, is the curriculum becoming too narrow?

Andreas Schleicher: It is hard to say. In our comparisons, we only see the implemented curriculum. We see what students can do. There, I can see it is narrower than in other countries, with students missing out on the more complex reasoning tasks. The tasks that really differentiate excellence are the ones in which UK students do not do very well. That is an outcome of a narrow curriculum. If you change the curriculum today, we cannot measure its impact until we see that in the students' test results.

Q216 **Ian Mearns:** That has exemplified the British system over a number of years: people are impatient to see the results of change.

Andreas Schleicher: Yes, that is always an issue in education. We can learn there. If you take a country like Japan, it has a curriculum cycle of about 10 years.

Q217 **Ian Mearns:** Singapore is similar, is it not?

Andreas Schleicher: Singapore's is seven to eight years. They start with a curriculum design and then think about how we train our teachers, how we change our work environment. Sometimes you have to change the work organisation of schools to facilitate the ideas of the curriculum. It is only when that whole delivery chain is working that you get the results.

Q218 **Ian Mearns:** Going back to an inquiry we did a number of years ago, am I right in thinking that Finland also has a 10-year cycle?

Andreas Schleicher: Yes. If you miss out on that, you will put one layer on top of the system and will not see much change in reality.

Q219 **Ian Mearns:** How do we then go on and create a system that prepares young people with in-depth subject knowledge, as well as skills such as problem solving, creativity and communication? I think back to growing up myself and listening to the radio, when people like Edward de Bono



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were on the radio all the time and lateral thinking was a big topic, in the late 1960s and early 1970s. Lateral thinking seems to resonate with looking at a problem from many different, variable routes. Would you agree with that?

Andreas Schleicher: Yes. Lateral thinking, triangulation between different perspectives, is one thing that distinguishes us from artificial intelligence and technology. That is the high premium for our success today. You learn that best through learning that is thematic, problem based and project based. Those are the necessary environments in schools, but they are hard to create, because if you want students to learn across disciplines, teachers have to collaborate across disciplines. It is very demanding.

Q220 **Ian Mearns:** Has the way in which the curriculum has changed, in England in particular, militated against that?

Andreas Schleicher: Yes, in a sense. It has made it more focused on the academic disciplines. Still, your schools have a lot of freedom. In principle, schools could teach in very innovative ways in the UK. It is one of your big advantages here, also residing in the academies. There is a lot more room for manoeuvre than in most education systems. It is a very positive element. Whether it is used to the extent possible, I am not sure, but, in principle, schools could do a lot of interesting things.

Q221 **Ian Mearns:** Do you have a magic bullet that we can use in order to create this environment?

Andreas Schleicher: It starts with the signals that you send. That is why the intended curriculum is important. Secondly, it is very hard for me to conceive that there is real change until the work organisation in schools really changes. That means defining the role of teachers differently. In a way, you have made teaching reasonably financially attractive, but it is not intellectually attractive.

Q222 **Ian Mearns:** We have to do something, though, in order to systematically increase the capacity for teachers within schools to be engaged in learning themselves.

Andreas Schleicher: Yes. It is a matter of capacity. It is a matter of how you spend your time as a teacher. If you go to Singapore, every teacher is a mentor and has a mentee. There is a lot of peer collaboration. Every teacher takes about 100 hours per year in professional development. They do that in part in schools. Many teachers start their career with a bachelor's degree. That is quite basic education, but every teacher will do a master's or often a PhD while they are teaching. There is continuous investment in learning. That is collaborative. That is a very, very important part. It is not about sending teachers to individual training, but it is about creating environments. England does that very well in the medical sector. Most doctors do clinical trials. They participate in research. There is a good tradition here in the country, but you do not see it in education.



Q223 **Ian Mearns:** I am wondering, though, in the countries that do that well, is the cost of doing that training then set against the cost of educating the pupils, or is it in some other budget head?

Andreas Schleicher: This is a very good point. High-performing education systems are not more expensive. In fact, spending on education predicts less than 20% of the performance variation among countries. They spend the money differently. When they have to choose between a smaller class and a better teacher, they invest in the teaching aspect. It is more about the spending choices than about volume of spending. We see high levels of productivity in the system.

If you think, for example, about the Finnish approach of putting 30% of instruction time outside the classroom setting, it sounds very expensive. When you look at failure rates, and think that they do not need a teaching assistant and do not have a lot of repair work to do later on, that is a very smart way of investing.

On our PISA assessment, we ask students, "What do you think makes you successful in mathematics?" It is very interesting that the majority of students in Britain said it is all about talent. Basically, they felt it was out of their control. They felt sorted by the system. If you ask that question to students in China or Japan, nine out of 10 tell you, "If I study really, really hard, my teacher is going to help me and I am going to be successful." That is exactly what happens. That is the experience that students have: that the system is very responsive to individual students' needs, and has the means and resources to do that. It is not about volume of spending; it is about spending choices.

Q224 **Emma Hardy:** I am really fascinated by everything you have been saying. I want to talk a bit more about the role of a teacher. I was really interested in the things you said about the decline in the need for routine cognitive skills in the future: that children will have to manage complex information and ambiguity, they will need different types of tasks, and the better skilled will have a huge advantage. All these things I completely agree with and think are wonderful. If that is the case and that is the truth as we see it, how will that change the role of the teacher in the next 10 to 20 years?

Andreas Schleicher: If you add into the equation artificial intelligence, you can probably digitise the delivery function of teachers to a large extent. It means that teachers will do a lot more on diagnostics, figuring out how different students learn and how different students learn best. They will be more of a coach and more of a mentor to students. That social, relational function of teachers is bound to rise. Certain countries, particularly in east Asia, but also Estonia and Finland, are already doing that really well, in the sense that they have an environment where teachers feel responsible for students and invest whatever it takes to lead them to success, as opposed to feeling responsible for delivering specific subject matter content.



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In terms of the teacher's role and the nature of their work, in the past, you would prepare teachers once for a lifetime; in the future, teachers will need to upgrade their skills every day. If they want students to be lifelong learners, teachers need to be lifelong learners. That requires a different work organisation. The third aspect is a collaborative culture. The combination of professional autonomy and a collaborative culture is another of those key factors that you are going to see in the future of teaching.

Q225 Emma Hardy: That is quite interesting. You just talked about collaboration and the teacher being a coach and a mentor. Is that going to change the culture in some schools? Will some schools have to change their culture to enable that to happen? The traditional view is of the teacher as the foundation of knowledge who stands and delivers to the children.

Andreas Schleicher: Most teachers have lost that advantage and the monopoly over knowledge. Students now have access to the same knowledge that the teacher has. The role of the teacher is to ensure that students develop curiosity, interest in the subject and learn by themselves. That is a very different and a much harder role as a teacher. It is much easier to stand in front of the classroom and teach what you know. It is much harder to get students to become active learners. Again, in the future, that is going to be the test of truth.

Q226 Emma Hardy: The other thing you mentioned was about the disciplines and the capacity to think about problems from multiple angles. You talked about crossing the boundaries of disciplines. How can you see that impacting what teachers do, especially secondary school teachers, in the next 10 to 20 years?

Andreas Schleicher: It would be a mistake, as a teacher, to think, "Now I have to teach everything. I have to teach cross-disciplinarily." That would water down the quality of teaching. It is more a matter of thinking, "How do I work with other teachers from other subjects on the development of joint projects?" For example, the history teacher teaches the same kind of theme as the maths teacher and the science teacher for students. That is the kind of cross-disciplinary learning that strengthens the capacity of students to think through multiple disciplinary lenses. It is not about having one lesson meshing up everything. That is a really wrong understanding of cross-disciplinary learning. It is about making learning more theme based and project based, and getting teachers themselves into that frame, so the maths teacher will say, "My way of thinking is only one way of looking at the problem and there are other ways of thinking about it."

Q227 Emma Hardy: Would you foresee that involving secondary school teachers developing their curriculum together?

Andreas Schleicher: Exactly.

Q228 Emma Hardy: We would potentially not have a national curriculum, but



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something that teachers would get together and work on. I come from a primary school background, so I am used to doing this, but I know, for secondary colleagues, this will seem very new.

Andreas Schleicher: Yes, but your national curriculum leaves teachers enough space. The work organisation currently does not encourage this in schools, because the work organisation treats every teacher separately. If you change that, your curriculum allows teachers to think about where synergies and overlaps are, and how to build student experiences that are more multidisciplinary.

Q229 **Emma Hardy:** What would have to change? Would it be the accountability for each teacher? I can already see teachers objecting to this, if they feel that the judgment of them as teachers could be impacted by the work another teacher is doing. Do you foresee that?

Andreas Schleicher: That is the nature of work in most workplaces now. Your success is the success of the team. It is a culture change, but it is also about finding space in school for professional learning communities where you work with other teachers. In my experience, those are the kinds of things that make teaching more interesting. For example, we look at job satisfaction of teachers in our TALIS survey. We found no relationship between teacher job satisfaction and class size. That is what people would say to you: that smaller classes make teachers happy. We could not find any kind of significant differences.

The single most important predictor of teacher job satisfaction was not the salary either. It was the degree of professionalisation, and this entails professional knowledge, professional autonomy and a collaborative culture. Where those three things were present, teachers were happy with the job. It makes teaching more demanding. There is no question about that, but it leads to higher levels of job satisfaction, to have an environment in which there is a greater degree of professional collaboration combined with a high degree of professional autonomy.

Q230 **Emma Hardy:** What would be your recommendation? If we as the Committee could tell the DfE something to change, what would you recommend in terms of the role of teachers and what teachers do?

Andreas Schleicher: If you want you do this in a cost structure, shift some time of teachers from the class size to more non-teaching working time. At the moment, your teaching hours and your share of working time spent teaching are among the highest in the OECD.

Q231 **Chair:** What about incentivising teachers to work in more deprived areas of the country?

Andreas Schleicher: That is very powerful. That is exactly what you see in countries like Vietnam and China. Basically, all their career structures are leading to disadvantaged schools. If you are the vice principal in a high-performing school and you want to become the principal, the system will tell you, "Show us you can turn around one of the lowest-performing



schools". They systematically align resources with needs. They do that in part with money. If you are a high-performing school, they give you more resources. You can hire more people and get more expertise but you cannot use those resources in your own school. You can use those resources only in a deprived school. Those systems have become very effective, because they do not make going to a school punitive. You get a little more money, but financial incentives work the least well. They make it part of—

Q232 **Chair:** Are you saying it is a proper career structure?

Andreas Schleicher: Yes.

Q233 **Chair:** They know they will get more resources in the deprived school.

Andreas Schleicher: It is about career structures as well as teacher support. What will matter most for teachers to go to a deprived school is not a bit more money but getting better support, better professional development and a work environment that is more conducive to the challenge. It is the same in other disciplines. Surgeons would never want to do the same operation every day. They would want to do the most difficult and challenging operation, because they get the best recognition and resources. That is very important. By the way, when you ask yourself, "Why do the 10% most disadvantaged students in Shanghai do as well as the average student in Britain?" it is exactly that. They are attracting the most talented teachers into the most challenging classrooms systematically through the province.

Q234 **Emma Hardy:** As a final question, how would you recommend that Government try to encourage teachers to work with teachers from other disciplines?

Andreas Schleicher: That is where curriculum has a very important role to play. If you have a curriculum that is siloed in disciplines, and you teach history or science, it is very hard to do that in a school. If you have a curriculum that frames more issues as cross-disciplinary problems, the likelihood that teachers will work together on that is higher.

Q235 **Emma Hardy:** Could you give an example from another country where this has worked and they work like that?

Andreas Schleicher: Yes, the most extreme example is Finland. I would not recommend going that far. They have basically made the entire curriculum thematic or what they call "phenomenon based". That is an extreme example, and the test is still out as to whether it is going to work. That is one at extreme. In Canada, the province of Ontario is interesting. They have introduced it in a more nuanced way, but it has had the desired effect of increasing teacher collaboration. That is important.

In PISA, for example, very interestingly, many tasks that we present to students are presented in an interdisciplinary context. The criticism we



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get every time we publish PISA results in countries like the UK is that the problem we gave to students is not a real physics problem; it is actually a maths problem. That is portrayed as a criticism of the problem, because teachers are used to having pure maths and pure science tasks. The moment things get interlinked, it is difficult for students and teachers, but it is something to put greater emphasis on. Your assessment is a very powerful tool to give students and teachers the signals that, in the real world, everything is connected. It does not help you to be good in one specific area if you cannot transfer that knowledge to another problem context.

- Q236 **Ben Bradley:** Before we move on, in terms of interdisciplinary learning, could I give you an example and see if my understanding of this is right? There is a school in my constituency that has done a project on the ancient Mayans. In their history lessons, they were learning about ancient Mayans. In their English lessons, they were doing creative writing projects about what they had learned in history. In another lesson they were cooking and eating food from that culture, and building that theme across all the different lessons. Is that the kind of thing that you are talking about?

Andreas Schleicher: Yes, it is a good example.

- Q237 **Ben Bradley:** Brilliant. I can go and tell them they are leading the world in good practice.

Andreas Schleicher: It is good practice. It is important that it leads to active exchanges among teachers about students. Team-based and project-based learning environments are quite common ways to do this.

- Q238 **Marion Fellows:** I am very grateful. Thank you. I am Scottish and a product of the Scottish education system. I was very interested in what you were saying about Curriculum for Excellence. That is a great trailblazer for the English system to try to go round some of the issues we have had, because it is a real cultural change. If you are going to change education, it probably needs the kind of autonomous teachers we saw in Finland and the kinds of things we came across in South Korea. Across the UK, teachers are looked in on all the time to see what they are doing compared to the results they are getting. That is not the way to best move forward.

Anyway, having said my piece on that, I really want to talk to you about the OECD Education 2030 project and how it identifies all the skills, attitudes and values that students will need in the future. It is quite a big topic. How are they going to identify the skills, attitudes and values?

Andreas Schleicher: To give a bit of context, that project is about identifying principles for curriculum design. It is looking not at the "how" question in education but at the "what" question: what should students learn? In part, it is through analysis of labour demand. That is something the OECD is very good at. We look at skill utilisation in economies and see patterns of change. What kinds of class types are more prevalent?



That is one of the analyses. We also speak with educators. In a way, job task analysis is still about the past. It is very, very hard to predict the future but you can, for example, see the types of tasks that artificial intelligence will make less prevalent.

We analysed those dimensions separately and came to three classes of knowledge and skillsets to prioritise. One is pretty obvious: the capacity of students to create value. That is basically the innovative, imaginative capacity of students. That is the most obvious differentiator to technology. The second is to manage tensions and dilemmas. Navigating ambiguity is probably the biggest challenge for most people today, both horizontally but also in a time perspective. We do not know what tomorrow is and we have to somehow be prepared to deal with the unknown. Resilience, managing tensions and dilemmas is very, very important in that. The third part is about autonomy and responsibility. Are you prepared to mobilise your cognitive, social and emotional resources?

Those are the three broad classes that we have identified in that project. It is a very interesting process because you have the countries of the OECD, which are very diverse and include very different curricular philosophies. You could see England pretty much on one end of the spectrum, maybe Japan on the other, and everything else in between. The 2030 project is about finding common ground and principles across that. It will hopefully help us design our future PISA assessments. We also use it with a view to how we should redefine the goalposts of education in a changing world.

At the moment, the 2030 project shows us that, in recent years, the gap between what societies demand and what education produces is becoming wider. That is something we are not catching up with in schooling. You can see that in every level of education, including universities. You have university graduates who cannot find a job and employers telling you they cannot find the people with the skills they need. At every layer of the system, there is a growing mismatch between what and how we are teaching and what students really need to be able to do.

Q239 Marion Fellows: I have been thinking this morning about how the culture of education in the UK, across Scotland, England, Wales and Northern Ireland, has to change in order to make things better for students and prepare them better for their futures, which we cannot all see. As far as the 2030 project goes, what outputs do you think it will have?

Andreas Schleicher: The first is a framework for curriculum design, defining those big dimensions. Then countries have to make their choices on how they prioritise that. For example, England could still say, "We will value knowledge more than we value skills and attitudes," but other countries might make different choices. It will spell out those dimensions



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so we have a common language across countries and can communicate curriculum design principles. That is the first output.

The second output is simply to provide a platform for sharing experience about instruction environments. I talked about work organisation. The OECD is a really good platform to see how different countries organise schooling.

You will be very surprised that what you think is normal in a British classroom is just one choice that you have made. The fact that you have teachers who mainly teach is a choice that you have made. If you go to other countries, teachers have a very different set of responsibilities. That is something the Education 2030 project will expose. It is not about developing a standard curriculum, because countries make very different choices, but it is about giving countries the tools to make those choices more explicit and compare them with choices in other countries. This is something that is surprisingly limited, currently, compared to most other fields. My advantage in the OECD is that we work across health, social spheres and economics. Most other sectors are far more advanced in having a common language than education. Education is still a very domestic and inward-looking sphere.

Q240 Ian Mearns: You have said that funding pressures are a big issue for education systems around the world. How do you feel a long-term plan for school and college funding would help the UK to face this challenge? In other words, we have talked in here about how the NHS has a 10-year funding plan. If we had a 10-year funding plan for education, would that be of assistance?

Andreas Schleicher: It will create something that is very important, which is to make spending choices predictable. Uncertainty in funding is one of the most detrimental factors in many education systems. This being said, overall levels of funding in the UK are okay. At least they are around the average or even higher because of the high level of private investment that you have. That is a big strength of the system here.

Q241 Chair: When you say private investment, you mean private schools.

Andreas Schleicher: Yes, and attached to higher education, with university funding.

Q242 Chair: What if you take that out and just focus on schools and FE colleges?

Andreas Schleicher: Your overall level of resources invested in education is still above the average.

Q243 Chair: Is that in colleges as well, post 16?

Andreas Schleicher: No, if you take that in isolation, you are one of the few countries that invest less in colleges than in universities, and less in vocational programmes than in academic programmes, despite the fact that you say you want to raise the aspiration.



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Q244 **Chair:** How much less do we invest in post-16 education, excluding higher education, than other countries?

Andreas Schleicher: We have the figures. I would need to look them up, but it is significantly less. You have good levels of spending in the university sector, but in the non-university choices funding levels are a lot lower.

Q245 **Ian Mearns:** The problem we have is that other countries spend less per capita on the system but their system is different. Given that our system is as it is, we have a situation where the leadership in schools and colleges are saying that, due to the restraints of our current system, they need more money within that system. Is that valid?

Andreas Schleicher: I am not sure. You should always look at both. You should look at how you work within that system and how you could make changes to that system to spend your money more effectively. I would not make both arguments.

Q246 **Ian Mearns:** We recognise particularly that FE, further education, has had a significant real-terms cut in funding in this country.

Andreas Schleicher: Yes. In the past, you already had this dichotomy between those who go to academic education and get a good degree, and those who do not. That would be amplified by this. If your assumption is that those who go for non-academic routes need more attention and more resources to get to greater skill levels, you need to spend more per student on those people. That is what many countries do.

Q247 **Ian Mearns:** Are there potentially, for the United Kingdom as an entity, negative consequences of the current funding route?

Andreas Schleicher: Yes. I would say this overall. There is no investment you can make that has a higher return than investing in great levels of skills. We have calculated the savings that you can make in education in the long run. If you can fix the significant share of low-performing students in school, which is something that we can do because other countries are successful with this, that is going to save you trillions of pounds over the lifetime of those people. These figures exist. The cost of action is a tiny fraction of what it will cost your economy if you do not do this.

Q248 **Ian Mearns:** It seems to me that you are saying we can probably get by with the level of funding we have if we have systemic change. Is that right?

Andreas Schleicher: Yes, that is what I would say. The overall level of spending is fair if you increase effectiveness. Take the country in Europe that spends its money best, the Netherlands. If you get to that level of effectiveness, your money gets you a long way. Levels of education are important. For example, you invest a relatively small share of your GDP in the early years, where evidence shows that sometimes has the highest returns. Your provision is still very much about care and not very much



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about education. That is a big issue. On further education, I agree with you. If you want your best plumber to become a teacher of plumbers, you need to pay them a salary. If you pay them a lower salary, the people you do not want to be teachers get into those jobs. It has real implications for the quality of learning in further education.

Q249 **Chair:** The school system says time and again that the funding is not enough, the cost pressures are too high, they face a lot of increased cost pressures in terms of pensions, national insurance and so forth. What would your response to that be?

Andreas Schleicher: On the pensions cost, the structures are so different across countries that I cannot really address that. I can look at only operating spending. I would still say there is room for increasing effectiveness.

Q250 **Chair:** You would put more money into early years and further education.

Andreas Schleicher: I think so.

Q251 **Chair:** You are saying, in essence, that the system is not balanced properly.

Andreas Schleicher: Yes. I will clearly say it will cost you more to get people to higher levels of skills in that sector than in the academic sector. That needs to be reflected in cost structures. In the early years as well, if that is to be about more than care, it will cost money.

Q252 **Ian Mearns:** Given that we have more than 20,000 schools paid for by the state, can the change you are talking about be effected in an institution-by-institution system, or does it have to be done systematically across the piece?

Andreas Schleicher: That is a very good point. I have always been very supportive of the trend towards academies because, in the 21st century, that level of empowerment is very important to create change. At the very same time, it has made your system more atomistic. The networks of academies may be part of the answer, but overall knowledge flows in the system are much less pronounced than in other voucher-based systems. If you look at Hong Kong, the Netherlands and Belgium, they are much better at having, at the same time, a lot of flexibility at the frontline and a strong system, which makes sure there are good knowledge flows, that teachers move across the system, and that you attract great talent to difficult schools. This is an area I would really pay attention to. Once again, equity will become far more important in the fourth industrial revolution than it is even today.

Q253 **Ian Mearns:** Although it is not completely impossible, getting headteachers and governors in individual schools to try to make changes is not going to affect the overall system.

Andreas Schleicher: Yes, but some countries address this through the work organisation. If, for example, you were a school head in Finland,



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you would spend two thirds of your time in your school and one third of your time in a local administration. In fact, the local administration is made up not of administrators but of serving school principles. That is where you meet your colleagues from other schools. That is where you frame and define policy for schools. You are a part of the system. You are not only responsible for your school. You can, again, create incentives. The outcome of this is very interesting. Only 5% of the performance variation among students in Finland lies between schools.

Ian Mearns: Are you suggesting some sort of bonfire of the bureaucrats in that case?

Q254 **Chair:** Could I ask you about the pupil premium? You praise that and the system in your articles. The feedback we have had is that the pupil premium is not accountable, that because it is not ring-fenced there is not enough measurement as to what it is being spent on, and that schools are using the money to fill gaps and funding pressures in other areas. How would you respond to that?

Andreas Schleicher: There are different approaches to formula-based funding. You can make that formula very prescriptive, telling schools how to use those resources, in a way. That has certain advantages in standardising spending patterns, but I would argue that where I see the strengths of the pupil premium in England is that it has created more ownership in schools for how to use funding.

Q255 **Chair:** You see it as a good instrument of policy.

Andreas Schleicher: It does not cost you that much. If you look at the level of investment in that and the effect it has, at least in many schools, of helping people to think about money and spending, that is quite a good system. You could go much further in formula-based funding. Australia is a good example. There are funding formulas that much more closely mirror the context of where students come from and ensure that it is equally attractive for schools to teach all students. In a way, you could introduce a funding formula and still have the pupil premium.

Q256 **Chair:** Have you looked at our opportunity areas?

Andreas Schleicher: No.

Q257 **Chair:** Okay, I will not ask you about that. I have a couple of final questions. In your writings, and you have mentioned this today, you talk about how expenditure in other countries is lower, yet the educational attainment is higher. You quote the example of Poland. You say that students in Poland perform the same at age 15 as in the US, but per-student expenditure is 40% lower. I have been to Poland to see the school system, but can you explain why the Polish system is so successful?

Andreas Schleicher: You have to discount for relative salary levels in Poland, but they are very effective in spending. They have done some really difficult things: school consolidation, for example, which is always



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the most controversial thing. In terms of raising quality, that has been effective. They also have done really well in making good choices. They have raised salaries and, at the same time, paid for that with structural changes like class sizes. It is a good example. Estonia would be another one.

Q258 **Chair:** How have they raised quality? You are talking about what they have done, and I am trying to understand how, with the limited resources they have compared to wealthier countries.

Andreas Schleicher: Poland, since the early 2000s, has put a lot of resources into teacher development. It is a very interesting route that they went on, where they de-tracked their education system. They had the Austrian and German kind of tracked education system. They put those tracks together, which placed huge pressure on schools to teach more diverse students. Then they invested a lot in teacher professionalisation. That had an impact first at the lowest end of the performance spectrum, so you could see significant gains there, and later on even at the top end of the performance spectrum. It is good.

Q259 **Chair:** That has been the pattern with countries like Estonia as well, has it?

Andreas Schleicher: Yes, Estonia is another really interesting example.

Q260 **Chair:** To confirm, this is just a signposting document, but are you in essence saying you are going to develop a curriculum across all primary, secondary and post 16 as a guide for countries to follow? This will be a curriculum for 2030. Is that right?

Andreas Schleicher: It is not a curriculum in terms of telling countries what to teach, but it is spelling out the dimensions along which countries could make choices. For example, in England you could still say, "We are going to put the premium on the knowledge dimension", but other countries could put the premium more on the skills or attitudes dimension. There will always be differences in curricula.

Q261 **Chair:** Which premium is best? Should you put it on the knowledge or the skills?

Andreas Schleicher: It is always a question of balance, but I would still portray England at one extreme currently. If you look across OECD countries, you will find very few countries like that.

Q262 **Chair:** Do not give us a politician's answer. Would you say we should be putting more of a premium on skills?

Andreas Schleicher: Yes, on the application of knowledge and the creative use of knowledge. The term "skills" in the UK has almost a negative connotation of being something low, applied and so on. I do not use the term in this way. For me, "skills" is about your capacity to creatively use and apply knowledge. In a way, the modern world does not reward you just for what you know. Google knows everything. The



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modern world rewards you for what you can do with what you know. That is the skills angle.

Q263 **Chair:** I think our Committee would agree with you. Can I say I have a huge admiration for you? I think you are one of the great educational thinkers of our time. I really do. I thank you so much for coming today. I hope that, when we publish our report, I think by the summer, you will make a public comment on what you think is the good and the bad of that report. It will, hopefully, without making any pre-examination of our report, reflect a lot of your remarks and your work. Thank you for everything you are doing.

Lucy Powell: Do you want to become Prime Minister of the UK?

Andreas Schleicher: I am not sure. In these weeks, it is the hardest job.

Chair: Thank you very much.