HOUSE OF COMMONS

# Education Committee

## Oral evidence: Teacher recruitment, training and retention, HC 1207

Tuesday 12 September 2023

Ordered by the House of Commons to be published on 12 September 2023.

Watch the meeting

Members present: Mr Robin Walker (Chair); Miriam Cates; Mrs Flick Drummond; Anna Firth; Nick Fletcher; Kim Johnson; Andrew Lewer; Ian Mearns; Mohammad Yasin.

Questions 117 - 148

### Witnesses

I: Hari Rentala, Head of Learning and Skills, Institute of Physics: Deborah Weston OBE, Research Officer, National Association of Teachers of RE; René Koglbauer, Chair of Board of Trustees' Association for Language Learning; Professor Paul Glaister CBE, Immediate Past Chair, Joint Mathematical Council of the UK (JMC), and Professor of Mathematics and Mathematics Education, University of Reading; and Ryan Ball, Director of Education, Design and Technology Association.

Written evidence from witnesses:

– [Add names of witnesses and hyperlink to submissions]

# Examination of witnesses

Hari Rentala, Deborah Weston, René Koglbauer, Professor Glaister and Ryan Ball.

Q117 **Chair:** Welcome to the third session of the Education Committee's inquiry into teacher recruitment, training and retention. We are taking oral evidence from Hari Rentala, Head of Learning and Skills, Institute of Physics, Deborah Weston OBE, Research Officer at the National Association of Teachers of RE, René Koglbauer, Chair of Board of Trustees' Association for Language Learning, Professor Paul Glaister, Immediate Past Chair of Joint Mathematical Council of the UK and Professor of Mathematics and Mathematics Education, University of Reading, and Ryan Ball, Director of Education at the Design and Technology Association.

You are all very welcome, and thank you for giving evidence to us today. I should say that, given the extreme humidity, witnesses and Members are very welcome to take off their jackets, as I have done. That may make you are little bit less uncomfortable.

Could I start by asking each of you what can you tell us about the extent of teacher shortages in your subject areas and how this has evolved over time?

***Hari Rentala:*** Thank you very much, Chair. Thank you also for the opportunity to give evidence to the Committee today. I would like to paint a picture of the shortages and the impact, through sharing with you a pen portrait of what it is like for an early career physics teacher. That might bring some of the issue to life for you, and I can answer any follow-ups after that. I will keep it quick.

**Chair:** It will need to be a speedy pen portrait.

***Hari Rentala:*** I will stick to the key points. Imagine you are an early career teacher, and you train in a school where there are no physics teachers, and there is not much support to go to if you need help. You start at a school where you are the only physics teacher. Again, there is not much support, either informal or informal. Despite being the only physics specialist, 60% of your timetable is teaching biology and chemistry, despite the fact that you have not done that since you were 16. Every week you are preparing for 20 unique classes, 12 of which are in a subject that you do not know very well. You are working evenings and weekends, you feel underprepared for many of your classes, you feel like you are not getting much reward from what you are doing and you feel isolated and lonely. At some point over the next few years, with a heavy heart, you join the roughly 40% to 50% of early career physics teachers who leave during the first five years.

**Chair:** In terms of the extent of the shortage—do you want to talk about that?

***Hari Rentala:*** Yes. Based on our analysis, there are around 3,500 fewer specialist physics teachers than we need in the system. I am sure that the Committee is aware that the most recent figures were 17% of the Government's own target, so quite a dire shortage. In terms of what has happened over recent years, last year was one of the worst years in at least a decade—possibly as much as 15 years. Interestingly, we saw a relatively muted effect from the pandemic, with not quite the same order of magnitude as changes that we saw at secondary overall. We are waiting to see what happens, as a consequence, on retention. That could be quite a difficult thing to measure.

***Ryan Ball:*** It is critical and it is pretty dire in design and technology. We have not hit our targets for pretty much the last decade. It is currently standing at about 25% of our target for last year and consistently under 50% of the target. We have a higher number than ever of non-specialists teaching design and technology. With that comes huge issues—not least health and safety issues, where we have PE teachers and we have languages teachers who have been forced to teach design and technology. What is a very practical subject by its very nature brings with it a huge number of issues.

It has a huge knock-on effect to our students. We are doing a big injustice to our students, who deserve better. It has not been rosy for a number of years. We had a slight increase during the pandemic but still failed to hit target yet again. It is a critical situation for design and technology.

***Deborah Weston:*** Thank you for inviting us to give evidence to this session. For religious education, the Government have missed their target in nine of the last 10 years. As Ryan said, the exception was the 2020-21 year when we had a 20% general increase overall of recruitment, with many subjects including RE above the target. This year, unfortunately, we have reached a whole new low. If all those holding conditional offers in July do take up their places, there will be just 239 trainees for the whole country out of a target of 665—36% of target.

As my colleagues have said, this is causing headteachers very hard choices to make. They can either ask teachers with other specialisms to teach religious education or—as is increasingly the case—they cut the subject completely from the timetable or combine it with another subject, doing a disservice to RE and also to that other subject.

The bursary is an issue. We have not had a bursary for the last four years. One of the impacts that we are seeing of that is that applicants are attracted to other subjects. Religious education has always attracted people from other disciplines. We can only get about 30% of our target from the theology and religious studies group. If there is a bursary in a subject, they have no choice, in terms of the financial circumstances, to go for a bursary subject.

The implications of this are obviously on standards. You can read in Ofsted's research review very specific information about that and what the impact is on the quality of religious education. It also risks pupils receiving stereotypical or inaccurate education on religious beliefs, prompting complaints from parents in some cases. You will remember the case of the worksheet presented to pupils in an RE lesson where the teacher wanted to illustrate the Prophet Muhammad—a mistake in itself—but instead he put a picture of Osama bin Laden. You can imagine the consequences to the school of that. However, if the training is not there, these mistakes will happen.

RE has not been funded at all in the last five years for anything, including bursaries. That adds to the general feeling that religious studies and religious education are not valued by this Government. That affects overall recruitment again.

***René Koglbauer:*** Thank you for the invitation. I want to focus on languages. First, teacher supply in languages is not a new issue and has been around for 20 years or so, and it is complex. I want to start off with the 2023-24 target for initial teacher training, which was set at 2,960. Only 37% of vacant training places have been filled. It is worth noting that the DfE recruitment target for 2021-22 and 2022-23 stood at 1,505 and 2,140 respectively. Therefore, we are seeing a specific increase, and that is very much linked to the DfE's EBacc ambition of 90% of students engaging with languages by 2025, so there is forward planning in there.

However, if you look at the graduates from university courses, based on the acceptance data of 2018-19, a maximum of 2,800 students will have graduated in French, German and Iberian studies this academic year. That would have required a 100% conversion of all students of MFL courses into teaching in order to get close to the target. From historical data and evidence, we know that about 6% of MFL students go into education-related jobs and only 3% end up teaching in the UK. That challenge is quite clearly highlighted.

It is worth noting here that if you look at the recruitment into universities in 2022 and the enrolment figures there, which were only 1,995, we would have missed the target by about 1,000. If you keep the target for 2027 the same, the crisis will grow considerably worse.

What we have is a vicious cycle, because from 2023 we have fewer students doing GCSEs and, as a consequence, fewer students doing A-levels, fewer students doing degrees, and you also have fewer teachers. It is a vicious cycle that we are in and it is obviously a challenge. Prior to Brexit and prior to the teacher supply crisis in Europe, which is currently ongoing as well, we were able to mitigate some of those shortfalls through European teachers coming over who were not able to find positions in their own countries. This has more or less stopped.

**Chair:** Is there a difference between specific languages within the MFL group? One of the concerns that has been expressed over a long period

of time is the decline of German take-up with regard to that. Is that reflected in the teaching population as well?

***René Koglbauer:*** What is reflected is that for those who want to become German teachers it is much more difficult to get a job. They have to go down the route of at least training in another language, such as French. A lot of German teachers who are currently in employment will be retraining if they do not have a second language.

**Chair:** Professor Glaister, thank you for waiting patiently.

***Professor Glaister:*** Thank you very much for the invitation. I am delighted to be going last—maths last but not least—because much of what my colleagues have already said here is true of mathematics. As you well know, having been a previous Minister, at the moment maths is a compulsory subject to the age of 16 at least. How many classes do not have in front of them this morning someone teaching them mathematics in a mathematics lesson? Probably none. Therefore, how you quantify what you mean by a mathematics teacher is something that we might unpick.

Many of the things that colleagues have talked about in terms of professional development, teacher supply, recruitment and retention, is obviously relevant to mathematics and has been for some while. You have much evidence that has already been submitted, and I can supply more, from many of the contributors and from previous inquiries of this Committee.

You can also look to other reports commissioned by the Government, for example from Sir Adrian Smith. There are two of those from 2004, which I can quote from if necessary, and 2017. But let me take you to a slightly earlier one. The foreword to this inquiry was, "Few subjects in the school curriculum are as important to the future of the nation as mathematics". That was not said that recently. That was said by Sir Keith Joseph in 1981.

A report from that same year, the Cockcroft report—which I highly commend to Committee members—said that, "The shortage of good teachers of mathematics has been a matter of concern for many years", and I think that it has only got worse. If we unpick what we mean by a "specialist maths teacher" and what is provided for them to encourage more to go into the profession and stay—maybe your questions will unpick that later on.

Q118 **Chair:** In terms of the overall numbers, I know that 90% of the target was achieved in maths last year. That sounds brilliant, but of course the target was reduced. One of the things that we had some challenge on from witnesses to this Committee in other inquiries was on the reasoning behind that reduction. Can you give us any greater understanding of that?

***Professor Glaister:*** If I knew the answer to that, probably I would not be sitting here. In preparation for this meeting, I looked and I could not understand why it had changed. Obviously it could be quite convenient to have a lower target because it is easier to meet. The question, of course, is whether these teachers are retained for one, two or however many years. Meeting targets on that front for training is slightly irrelevant, as far as I am concerned, but it certainly points out that we do not have a long-term strategy. We should not need to be changing from one year to the next. We know from mathematics that for some while there has been a shortage of what the profession would like to call "specialist maths teachers", able to deliver on the schools White Paper. That is rather short-sighted.

Q119 **Chair:** Before I hand over to Ian, on the Prime Minister's aspiration, you talked about maths being compulsory up to the age of 16. Clearly, the Prime Minister has the aspiration of making it compulsory up to the age of 18. That presumably will require even more specialist teachers. Do you have any indication where that supply is going to come from.

***Professor Glaister:*** No, I don't, but you are possibly not asking the right person.

As I am sure the Committee and Chair know, the Joint Mathematical Council of the United Kingdom, of which I was the immediate past chair, comprises 22 subject associations, all national associations, learned societies, subject associations and other charities all involved with maths or maths education—of which I am a member of many—and 11 observing bodies. Therefore, whatever I say is not necessarily going to be the viewpoints of all of them, but I would like to think that my experience will at least reflect what many of them believe.

From a personal level—I think this is shared by most on the JMC—we think that maths to 18 is a good thing. You will have had input from learned societies, Protect Pure Maths and so on. You are speaking to someone who happens to be wearing his core maths tie. This tie has been at every single event, briefings to universities or other events, where I have been presenting on core maths, which the Chair knows a lot about, and also on A-level mathematics. Therefore, I am very much for this but the answer to your question is, no, we clearly do not have enough specialist maths teachers to deliver on that but that would not stop me from keeping on pressing.

Q120 **Ian Mearns:** Can I do a quick follow-up on that, particularly to Professor Glaister? Recently we have had a situation where, having missed its recruitment target for mathematics initial teacher trainees for a number of years, the Department then reduced its target for maths trainees for the following year. Has anybody ever explained the logic of that to you as a mathematician?

***Professor Glaister:*** No. I don't think that I have asked the question. I am pretty sure that if I wrote to the Minister, I would probably not get a

response. We can come back to ministerial responsibilities later on—not being critical, but I have a recommendation, not for said Minister but for what the Committee could do in the future. But, no, that has not been explained to me and I have certainly not asked the question. I hope that you will have the opportunity to ask soon.

**Ian Mearns:** We will. It is something that is in the back of my mind, certainly.

***Professor Glaister:*** It is the retention that is the issue.

Q121 **Ian Mearns:** That is exactly what I was going to come to. To all panel members now: Department statistics indicate how different subjects perform in terms of initial teacher training recruitment and proportion of hours taught by specialist teachers. But do we know enough about the attrition rates of teachers in different subjects? We have an array of five experts covering five different subject areas here. Do we know enough about attrition rates? Hari, in your opening answer, you suggested that about 40% of physics teachers would leave within a few years.

***Hari Rentala:*** Yes, and that is probably a slightly more conservative estimate. Different figures get quoted because it is not that easy to understand the numbers based on how the data is captured, but we think 40% to 50% in the first five years. We did a survey last year and the year before—it is not a published piece of work—and there is a link here in the context of physics, based quite strongly on workload arising from physics teachers frequently having to teach a significant amount of their timetable outside of their specialism.

We found that nearly half of early career physics teachers teach less than two thirds physics, and 40% of those considered leaving the profession in the previous year, which is twice the proportion of those who are largely teaching physics. It is not cause and effect but it is an important correlation.

***Professor Glaister:*** I will declare a minor interest. The Institute of Mathematics and its Applications, for which I am an honorary secretary and a trustee, runs the IMA teacher training scholarships, so I am not going to comment about those, per se, except to say—in common with the physics one and so on—that as a learned society running this contract, we are not able to know about retention. We note that they deliver on the scholarships and that is it.

Clearly, retention is an important factor and that is what this Committee has to live with. You are not going to get as many people as you want to do maths instantly but, once you do manage to increase that, hopefully you will get more, with changes, who are retained. But at the moment we don’t have any decent statistics on that. That is something that should be No. 1 on the to-do list of sometime at the Department every time they wake up in the morning, given that we do not have NCTL anymore.

In terms of retention, if you can change the culture of being a teacher—it is not all about maths but it is clearly quite high on the agenda if it is a compulsory subject—you need to change the culture among society. That is not going to happen any time soon. You need to change the status of the teaching profession and the professional development opportunities—and, of course, you cannot have professional development opportunities if you have a shortage of teachers, because they cannot be released. It has to be recognised that teaching should be a high-status profession. I would hope that that would mean more would want to go into teaching from a maths degree, for example.

At the moment, you have young people who aspire to be lawyers and so on. Their most immediate experience of any work environment is in a school so possibly the last thing you want to be thinking about is going back into a school and dealing with all the behaviour issues and so on. But maths teachers go into teaching, at least from ITT, because they are passionate about their subject and they want to spend as much of their time working on mathematics.

ECF has been mentioned, the core framework. You do not want to have anything in here that puts teachers, who are passionate about the subject, off continuing to want to teach. Any input that the Committee gets on that front I can assure you is true on the ground. Of course, if the Department collected data on this and found out why people did not stay, and had to publish it, maybe you and the Department would have a better understanding of why we have this crisis.

Q122 **Ian Mearns:** Is that is a major hole in the system—that the Department does not have a simple register to collect the data in terms of the comings and goings?

***Professor Glaister:*** It does not have and it does not have a Minister of State whose number one job is teacher recruitment and retention. You cannot have a school system and compulsory maths without that. We have a Minister who is absolutely passionate about skills, technical education, T-levels and apprenticeships who was sat in that position as Chair of this Committee. He is constantly doing this job and you can see a lot about it, which is great. I believe we do not have the capacity in the ministerial team to deal with teacher retention and recruitment as a priority. I could send you a suggested phrase, even, for this. NCTL just got landed, so the Secretary of State and the Minister of State's job is to deal with this, along with a number of other things, including concrete and so on.

**Ian Mearns:** Thank you very much.

***Deborah Weston:*** The figures that we are getting are somewhere between 30% and 40% over five years too, but the data is really difficult to interpret and made more complex because—according to the latest data from the DfE—51% of those people teaching RE mainly spend their time teaching in a completely different subject. Therefore, who counts as

a teacher of RE? In the workforce data you count as a teacher of a subject if you teach one lesson of it, so it is very difficult to interpret the data on that basis.

The other area that we need more data on is the regional variations in this pattern. In religious education, we have been looking, from the ITT census, at how we get from the number of people in the supply coming out of ITT into jobs and advertisements. In the east midlands in 2021-22 there were just 18 available to fill all the vacancies in the region that year. In the north-east—particularly badly served—there were 14. If you open the *Times Educational Supplement* or one of the other advertisement sources for jobs, after all those spaces are taken up and all those people have jobs—which is happening earlier and earlier in the year now; most have jobs by the end of March, end of April and resignation dates for teachers is the end of May—there were hundreds of jobs and often more than the total supply that was published. We do need the regional data as well to help us understand the situation.

***René Koglbauer:*** I fully agree. The regional data is important as well as the national retention data. We are working at the moment with 40% in languages, but what is important is the hidden number of the non-specialists. We alluded to this earlier. Ultimately, if decisions are made at school level—at curriculum level—where suddenly Spanish is introduced, how are teachers retrained and how many non-specialists are teaching languages? That could have a knock-on effect on the quality of teaching as well in terms of upskilling and so on.

The other element with retention that we are slightly worried about in languages is that we have not yet seen the expected resignations of those who are former European citizens, because the pandemic has stopped people moving back. Our indication is that more and more people are thinking of leaving now and returning to their home country. That could be another challenge. We know that in some areas about 100% of language departments in schools have at least one member of the department who is from a European country.

Q123 **Chair:** It is a factor in general. A lot of the EU citizens—who are very welcome to stay, we should be clear—have stayed, which is a welcome picture, but it is particularly important in that language teaching area.

Before I hand over to Kim, I want to ask on the language piece about the primary-secondary handover, which is particularly difficult. When I was looking at this from within the Department, one of the things that struck me was the oddness of a situation where you can have schools within a pyramid that teach one language at primary, and then the secondary school teaches a completely different language and has to start from scratch. Should the system be designed in a more coherent way to support teachers and make sure that there is more continuity?

***René Koglbauer:*** That is an interesting point. I remember the conversations that we had when we looked at the primary transition

element a year or so ago. We have approached the issue—I think rightly—as a multilingual language policy in schools. European countries have it easier in that sense, because English is the first default for a language and therefore you have progression. We have decided that unless you have one language, and then kind of go through, you will not get the progression. But you could be thinking about more regional approaches. That is the first thing that we have seen with some academies and academy chains where they have developed a pyramid system, ultimately.

The other question is whether pedagogically there could be a focus on what the focus is of primary languages. Is it about the general knowledge of language or is it about language learning skills, per se? That is where even the community is debating what we want to achieve.

***Ryan Ball:*** Similar to my colleagues, trying to get the actual numbers for retention of teachers is tricky per subject but, certainly, visiting schools and speaking to our members, retention is a huge issue. It is a less appealing subject or profession than it once was. Certainly, within design and technology, being specific, there are various different issues that link to the job. An increase in the number of students who are in front of you in the class brings with it potential issues, again to do with health and safety, and classroom management. We are hearing of 30 students being squeezed into a classroom or a workshop that is simply designed for 20.

We have also seen a lack of technician support. I know, from speaking to teachers, that they are often spending their weekends preparing materials for the coming week where they don't have that support within the department to help them with that. Similarly, with things like budgets, for instance, it is not uncommon for teachers to rummage through skips to find pallets to use the materials for the students to use in their work. It is simply not good enough.

With it, it brings a vicious cycle—a bit like my colleagues were saying—to do with industry. We have a massive shortfall in the engineering and creative sectors, where research from the IET has found that nearly half of engineering businesses are finding it difficult to find the skills that they need when they are recruiting. Across the STEM sector as a whole there is an estimated shortfall of about 173,000 workers.

Those pipelines are often going to come from the students who are studying design and technology and at this stage simply do not have the opportunity to do so. It is almost like a postcode lottery around the country where students have this opportunity and have a well-supported and funded department in school. In other schools where the parents want their student to do it, there simply is not the opportunity. As a father myself, I want my children to have the ability and the opportunity to study everything on the curriculum to find out where their passion, skills and talent lie.

Q124 **Ian Mearns:** In a nutshell, I take it from everything that has been said

that all of you would find it useful if the Department was collecting data on recruitment and on attrition rates.

**Chair:** Also on a regional basis, which is something that has come across strongly.

***Professor Glaister:*** Absolutely regional, and we will perhaps come on to different funding mechanisms on that too.

***Hari Rentala:*** I would completely support that. It would require a fairly nuanced discussion around what constitutes specialism. Using degree as an indicator is a blunt instrument and is not necessarily the most helpful way of thinking about things, especially when you are thinking about specialists teaching up to GCSE.

Q125 **Kim Johnson:** Good morning, panel. I want to pick up on Deborah's point about regional disparities. The Child of the North APPG has just produced a report talking about disparities between the north and the south, particularly as a result of 13 years of austerity. How does that impact on teachers going to work in the north and being given access to physics and good quality mathematics, and how do you see that impacting in the future?

***Hari Rentala:*** Could you just repeat the question?

**Kim Johnson:** It is about regional disparities. If the north is starved of funding and resources, so that schools do not have the same level of resources that they do in the south, is that going to impact on teachers moving to those areas, particularly physics teachers and maths teachers? Will it affect the provision of greater opportunities for our children in those northern regions?

***Hari Rentala:*** I have a couple of things to say to that. First—this is not specific to the north, per se—we do see a particular effect where physics teachers tend to congregate in less disadvantaged areas, such as grammar schools, schools that are more successful and schools in wealthy areas. That has a knock-on implication for the number of young people who then pursue A-level physics and so on from there.

The other effect to be aware of is that there is a slight stickiness to where teachers study, where they qualify and where they then go on to teach. You end up with a slightly vicious reinforcing circle; if you are starting with a cold spot, it ends up staying cold or may get colder. Those are the two ways that I look at that particular question.

***Deborah Weston:*** One of the pieces of research that NATRE did relatively recently was to look at GCSE entry between different local authorities. We ranked them from top to bottom, from those that entered the highest percentage of students to the bottom. When I put that data next to the average points score of the pupils across the piece, there was a one and a half GCSE gap between the top and the bottom. Kim, I can send you later how that relates to north and south. I have the table but I

have not graduated it to that degree. It is very interesting and this speaks to the national curriculum and the whole issue of it being an integrated piece of work. If you pull subjects out, like religious studies or arts and music and so on, there can be crumbling across the piece.

***Professor Glaister:*** I had a submission from Protect Pure Mathematics, supported by the LMS and the IMA learned societies. It talks about the concern there is that smaller maths degrees may be under threat because many of the larger universities are increasing their numbers. There is also some talk about ITT provision. Some of the input that you have had to the Committee talks about cold spots for that. If you think about a young person who has decided to go to university to do mathematics, we would hope that they could go anywhere in the country or they may need to stay at home, but also to train to do mathematics they may want to do that at home as well. There are those considerations that you need to think about in terms of areas and regional disparity.

In terms of teaching, unless you have a firm understanding of whether a school is as well populated with specialist maths teachers as you would want, you do not really know whether there is a shortage. You can probably identify, if we have this retention data, whether there is a great turnover, but if there is someone standing in front of a maths class, you say that you are fully provided for. On the other hand, if teaching in some of those areas is not that popular, because the schools are struggling and they do not have the resource to enable young people to want to go to work there, or have the professional development opportunities open to them and feel that this is a career for them, they are on this constant changeover.

Yes, there are regional disparities but you have to also identify that there is an issue there in any one of these areas. Probably if you survey the teachers in those, they will say that they feel under great strain, so it is not going to be a popular place to go and teach. You could provide incentives to go there. Incentives are not just about finance; it is about how you feel you are valued in that school and whether you have a career path open to you that does not require you to become an assistant head or a head in order to go up the pay scales.

Q126 **Nick Fletcher:** I have been doing quite a bit of work on issues that affect men and boys. One of the things that has come up is a lack of male role models and lack of male teachers. I did a bit of a survey myself so we do have some of these answers, but I am keen to hear what you have to say. Thirty-five per cent of secondary school teachers are male and only 14% of primary school teachers are male, 25% of special needs teachers are male, and 30% of primary schools have no male teachers at all. What does the panel think of that as an issue? Eighty-one per cent of the people we surveyed thought that it was an issue and thought that it would be better for the school environment if there were more male teachers in schools. Do you agree with that, and what can we do to encourage more men into the profession?

***Ryan Ball:*** I do not think that the gender split within design and technology is an issue. We are seeing increasing numbers of females entering the profession. Part of the problem that we have with design and technology as a subject is its legacy view from certain people outside the subject of still holding on to legacy terms—that it is making things out of wood, whacking nails in bits and is taught by middle-aged white people with beards, with the technicians in the back smoking a fag in the stockroom. We have a huge issue to do with what the design and technology subject is. We have put together proposals, moving the subject forward, that probably includes a name change. Design and technology then does not relate to anything into industry and into further and higher education. It is a multifaceted subject; it is using modern technology and is forever evolving.

A lot of the issues with that is the CPD and the training of teachers who are having to do it in their own time. Even from when I started teaching 20-plus years ago, the advancement of the technology, let alone the pedagogy and how to teach the subject, has moved on massively. We now see primary schools that are teaching 3D printing to students, which is not uncommon. We need to make sure that that shifts further up.

We need to make it an appealing and attractive subject. At the moment, the morale of design and technology as a subject is probably at an all-time low. That is part of the reason that retention is not so good, and there is that thought around going into a subject where it seems uncertain, with GCSE numbers falling year on year, schools closing their doors and departments in schools selling equipment. Once these things have gone and the doors are shut, it is very, very unlikely and very tricky to get them back in again. We have a big issue to do with the overall outlook and the view of the subject to make it appealing for students, for teachers and for other people as well.

***Hari Rentala:*** We would agree that the diversity of the teaching profession as a whole is important and that it is essential that the diversity of the teaching community within a given school is as representative of the local community as possible. We would urge a little bit of caution about trying to translate into diversity of the physics teachers in a school because we are talking about such small numbers. What does representative diversity mean when you have one or two people? But it is important that those young people can see strong role models who look like them in that community. That is one of the enablers on progression.

The other thing that I would point the Committee to is the ask from our Limit Less campaign in a school context. This is about the importance of the school being a genuinely inclusive place. We are calling for mandated whole-school equity plans, to include things like not only inclusive teaching but also the curriculum, and how the school engages with parents and the local community. These are all factors that determine

whether the school is a genuinely inclusive place to learn, and will have a very meaningful impact on progression post 16.

Q127 **Nick Fletcher:** What would you do to encourage more men into this?

***Hari Rentala:*** In terms of encouraging recruitment, it is not just about recruitment processes. In the way that I just talked about places being inclusive places of learning, it is important that they also have a reputation as inclusive places of working. So much of that is about the brand and reputation of the organisation, in terms of how it treats its people, how it offers working conditions that meet the needs of different groups, what its culture is seen to be and so on. There is a whole range of things that you can do from an inclusive recruitment perspective, but the way the organisation is run is going to have a lot of blowback to how effective that is in reality.

***René Koglbauer:*** In languages it is known that we have a high proportion of female language teachers over male teachers, but I want to give you an example from my experience as a university lecturer. This year I had a cohort of 18 students on a specialist module. They have just returned from their year abroad, having done their foreign language assistantship in one of the countries, and then are engaging in my module, which is basically a mini PGCE to give them an opportunity to delve into a school experience, with 40 hours in schools and reflective aspects around it.

What was interesting was that 12 out of the 18 are going into teaching. The four male students, however, have felt that the pressures in the school placement that they observed in those 40 placement hours have made them rethink whether they want to be teachers. What was interesting for them was that they said that there are lots of other opportunities with languages where you do not have that stressful environment that a school would present. They are seeing those opportunities, whereas the female students have more said that there is an issue there but they want to go in there to contribute towards solving the problem. I wonder if there is a big challenge for us to also see how schools present themselves and how we tackle some of those workload pressures that may lead to students not going into this profession.

***Professor Glaister:*** In terms of equality opportunity for students, particularly in deprived areas, you need as diverse a population in mathematics teachers as you can get. The Science and Technology Committee has done an inquiry on diversity in STEM. But whether mathematics is popular or not, we already know that it is compulsory so we are not having drop-off in numbers of students who are doing it. They are doing it, but are they enjoying it? Could they enjoy it better if they have a diverse and stronger workforce, particularly in areas of deprivation? I think that the answer would be yes.

If we look at diversity just in terms of gender, we can argue as to whether this is fine or not, but the 39% of students doing A-level maths

are female—whether or not it should be 50%, I think that that is fairly heathy. We would like to do more but I do not think that the reasons that it is not 50% are anything to do with diversity of teachers.

For maths and sciences graduates, 37% are female. If you are thinking about teacher supply, the greater the diversity, the larger proportion of females you have going to both of those areas—A-level and studying for a degree—might improve the situation, but in the end for mathematics teacher retention and recruitment is not related to gender; it is related to parity of esteem and career opportunities.

Q128 **Nick Fletcher:** I have one further question. I do not know the answer to this, which is why I am asking the question. Is there much part-time teaching going? Would somebody who is my age, who has been an engineer for most of their life, be able to move into teaching and do it part-time? Is that something that we have looked at it? Is it something that you would welcome? Is it possible to have part-time members of staff within a school environment, and does it work? If there are pressures on the job and we could have people who could just come in for a couple of days a week, surely that would help—especially from an engineering background like myself, where you can show what you are trying to teach and why it means something, because of the application rather than just learning for learning's sake?

***Deborah Weston:*** I am so glad you raised that question, because it is an important one. I became a job share just after my children were born, and I taught as a job share and was promoted in that jobs hare position—50%, right the way through my career. I stayed in teaching for 35 years. It was very important for me and it kept me in the profession. If I had had to choose between my family life and teaching, you can guess what would have won.

Part-time is a really good route. I heard Mary Bousted in one of the earlier sessions talking about flexibility, and she used the example of physics. If she had a physics teacher who could teach 10.00 am to 2.00 pm, she would fix the timetable. But schools are very inflexible places. The pressures on headteachers are so significant, in terms of accountability and so on, that there is a nervousness about taking people on part-time. We definitely need flexibility within the workplace but also through training, with part-time training routes. There are some out there, but they are not everywhere and the geographical spread means that if people do have families and so on, they do not have the opportunity to travel great distances. Part-time and other flexibilities in the system would definitely help to address some of these issues.

***Hari Rentala:*** I agree with what has been said by my colleagues. You brought up your background in that question and I felt that it was incumbent on me to point to a positive development that we are seeing vis-à-vis engineering. That is that the DfE has started a pilot PGCE that specifically targets engineers who might look to go into physics teaching. It is small-scale at the moment. We are involved in it; we think that it

has real potential and we would like to see it scale up. There are just so many more relevant engineering graduates than there are physics graduates. It is a pool that we should be targeting more proactively.

Q129 **Mrs Drummond:** One of the reasons that I like the UTCs is because they do all of that. People come in part-time but they also concentrate on physics, engineering and so on.

I want to concentrate on the impact on learning of the shortage of specialist teachers. That is not to be horrible to any teachers who have to teach outside their specialism, but I want to find out what the impact is on children and students of not having specialist teachers. I am sure that you have lots of comments on that.

***René Koglbauer:*** Thank you for that question. I will start with a personal experience. Before joining a university, I taught for 10 years in secondary education—German with a bit of maths. Suddenly someone asked me to do French, which I did not have on my CV, because the perception was that linguists can do all three languages in a school. I ended up teaching Spanish, but the first Spanish lesson I taught, I was one page ahead of the children. Fortunately, the school had enough funding at the time to send me for the summer to Salamanca to give me an upskilling course. That is an example of what happens with non-specialists. While I had the pedagogical skillset, I would not have had the linguistic skillset to deliver a successful Spanish lesson. It is important to ensure that, before they start teaching, non-specialists get appropriate training. That would be true for all subjects.

**Mrs Drummond:** What impact did that have on the outcomes of the learning for the students?

***René Koglbauer:*** First, one of the things that will happen is that you are not going to be as flexible when questions come, because you are within the knowledge of that particular lesson rather than within the full language knowledge and cultural knowledge that you have. If you are a skilled teacher, you find ways around this—utilising of dictionaries and online resources and so on—but it is a completely different learning experience. If I had carried on teaching up to GCSE, it would have had a potential impact on the results.

***Deborah Weston:*** It is worth mentioning that students detect a teacher who does not have the confidence. That can have an impact on all sorts of things, including their wish to study the subject to a higher level if they don't think that the teacher is in command of their subject. Pupils' views are important.

It is not a complete dead-end in terms of subject qualification because you can become an expert over time with the proper CPD, the proper resource. I want to mention a programme that NATRE runs called New2RE. With grant funding, we put a lot of investment into students over a three-year period. The dropout rate from teaching in that period

was only about 2% or 3% and many of those went into education-related things anyway. It is not a foregone conclusion that people are going to go. If the proper support is put in, we can encourage them to stay.

It affects the options because students do not have the confidence, but perhaps more importantly, as I mentioned earlier, the inaccuracies and the stereotyping and the purely incorrect information is another big issue. With a subject like religious education, dealing with so many contentions issues, that is particularly important. Then what happens is headteachers look at those risks and look at the issue, and decide then that, despite the fact that religious education is compulsory right the way up to 18, they need to cut the subject. We are seeing massive cuts all over, and 22% of schools report zero hours of RE at year 11 now, even though it is a statutory requirement.

Q130 **Mrs Drummond:** The outcomes would be non-existent in that case. It is interesting that you said that there was some professional development. What sort of professional development is given to those poor teachers who have to teach outside their areas of expertise?

***Ryan Ball:*** At the Design and Technology Association, we trialled a three-day course this summer. We provide lots of CPD for teachers, face to face and virtual. This year around 40% of our face-to-face courses have been cancelled. Through the demand for design and technology training for non-specialists, we trialled a three-day course in the summer holidays, thinking that it was not going to be taken up. We had a waiting list and had to turn people away because we simply could not fit them into our offices to deliver it. We also know that this cost several hundred pounds, and some teachers were paying for that out of their own pocket because they are anxious and concerned about teaching the subject. As Deborah says, it is not a lost cause but it is certainly not ideal. If I was a headteacher and I had to make that decision, "Do I get a non-specialist teacher in or shut the doors to it," obviously I would go for the first one.

In terms of your previous question, for our subject it potentially dilutes it. We see lots of non-specialists asking for units of work and for lessons that can be done in a classroom with paper and scissors. We are going from primary schools where we have seen a huge increase and interest in design and technology to year 7, year 8 and year 9, where students are sat down with paper and cardboard and a pair of scissors, and we are calling it high-class, modern design and technology. It is simply not good enough.

***Hari Rentala:*** If I could pick up both your questions, we are clear that specialist teaching is an important enabler of high-quality education. I mentioned earlier that to teach physics effectively they need to know enough about the subject, but also to have a sufficient understanding about how to teach the subject and to think in ways that mean that they can communicate that effectively. Let's not forget also that they are there to inspire young people. Going back to my colleague's point earlier, if they feel rocky about the subject themselves, that is not going to be a

strong platform to start from. We have anecdotal stories of teachers of completely unrelated subjects—social sciences, PE—being asked to teach physics because there is no one else. From the schools we have worked with, schools that had poor progression rates, we would often reach out to them to find that they had one or no specialists. Again, that is not cause and effect but an interesting thing to note.

On the retraining point, the landscape as a whole is slightly patchy in terms of what is on offer. There is one initiative that we were initially involved in that is available—the SKPT subject knowledge for teaching physics—that we think is credible. It is like an in-service, subject-knowledge enhancement programme that aims to reskill teachers in a formally recognised way that will enable them to teach physics up to GCSE.

The existing initiative is valuable and welcome. We are calling for it to be intensified a little bit and we also think that we need financial incentives for both schools and teachers to make it credible that they are going to find the time and pay for the time to take part, because we know that the system is stretched as it is. But there is something to build on there and that is important.

Q131 **Mrs Drummond:** Isn't it the case that if you do not have a specialist physics teacher, the school is less likely to offer triple science?

***Hari Rentala:*** That may well be the case but they still have to teach some physics as part of the national curriculum.

Q132 **Chair:** You mentioned physics teachers having to teach the other sciences. Because of the very specific shortage of physics teachers, it is often the case that you have biologists or chemists teaching physics. That is probably more often the case. Do you know if there are equivalent figures—you gave us some figures on the proportion of physics teachers' time spent on other subjects—just to compare?

***Hari Rentala:*** There will be. I don't have those to hand but we do know that biology and chemistry teachers—and others far outside the sciences—are asked to teach physics. That is why we think that for those who are routinely expected to do so—and this programme is targeted at established teachers of the other sciences—this initiative is helpful.

The other benefit is that if it is aimed at established teachers—people outside of the early career period—they are much more likely to stay at that point, so you are making an investment in teachers who are more likely to stay in the profession and who have already learnt and developed their expertise in many aspects of the craft that makes them great teachers, such as behaviour management and so on.

Q133 **Mrs Drummond:** Are there enough physics teachers at A-level? We have talked about GCSE, where you can maybe fudge it, but at A-level you definitely cannot.

***Hari Rentala:*** Worryingly, there will be examples of A-level physics being taught by people who have not studied physics at A-level and are reading ahead of the class, as René mentioned earlier. It is probably slightly less prevalent than the absence of specialism at GCSE but it is still very much a problem. That is possibly linked to the issues that we are seeing with the withering of subject knowledge enhancements that would equip someone to be able to teach at A-level, but there is far less throughput through those and they are of a lower intensity than they used to be.

**Mrs Drummond:** That vicious cycle that one of you talked about earlier. Can I talk about the maths?

***Professor Glaister:*** Yes. I am a qualified maths teacher and I would want to go back part-time, but I don't know if I wanted to do two days I would only be able to go in two days—but that is another issue. I did A-level physics and I did physics in my first year at degree. If I was teaching physics, it would be a fudge, if I may quote you.

In terms of professional development opportunities, can I point out the input you have already had from a lot of people on the ITT core content framework and the early career framework—the amount of subject-specific content on that. Could that have a damaging effect? You have talked about outcomes. This Committee has already heard, in the maths to 18 session that you had, about comparable outcomes. The same number of people are going to get a level 2 or grade 4 GCSE regardless of how they perform, but with 20% for getting a grade 4, that is not great.

That must have an impact on students' perception of the value of mathematics and how useful it is to them if they have someone who is just getting them over the hurdle. I don't want to dismiss any people who are teaching maths who do not have specialist maths training. They are doing a great job, but is that what they really want to do? There are lots of negative consequences, particularly if many of them don't want to continue using their maths post 16 and then they find themselves in a job where they have to.

There is a lot of churn, of course, in the teaching profession—in mathematics particularly. I hear many stories from people I work with who say, "My son has a new teacher and it has made such a difference", because a person has left or whatever. There is that kind of constant changeover.

There are a lot of professional development opportunities available to maths teachers. Whether they can access them is another thing. NCETM, which I am sure that you will be aware of, is a Government-funded entity run by MEI, which is a charity. It is all specific work group activities. That may not suit everyone, but it certainly suits a lot and it includes subject knowledge specialism for non-specialists. But can teachers access it? It is advertised as free but the school does not get any buy-out time. This is

all in their own time. This is not just a finance thing; it is also the fact that we have a lot of teachers who do not have the capacity to go and access these things. That is important. There was a teacher subject specialism training activity under NCTL, which was absorbed within the NCETM offering, but again it is about the wider CPD aspect.

**Chair:** We will come back to more CPD in a minute. I will move the session on if that is all right and bring Miriam in, because I know she will have to step out shortly.

Q134 **Miriam Cates:** I want to explore the financial incentives a bit more—the bursaries and their impact on recruitment and retention. I will declare an interest. I did a PGCE in 2007 as a chemistry teacher and I think that I got £9,000 bursary that year to do it, which definitely incentivised me to do it. I probably could not have afforded to do it otherwise, although obviously I am no longer a teacher so it has not retained me.

From the evidence, it seems clear that there is a link between the existence of a bursary and recruitment, but not necessarily the retention. I want to explore that more and whether you think that keeping people in the profession is all about the money or whether there are other factors—such as finding yourself not suited to it, getting frustrated with behaviour or getting frustrated with bureaucracy—and whether you think money is the answer or whether it is more nuanced than that.

***Hari Rentala:*** Even if money is not the key or principal motivator, pay competitiveness will be a factor. I don't think we can get away from that. For shortage subjects, there is quite a lot of evidence out there that suggests that recruitment bursaries have a positive impact, and therefore they are probably an important part of the solution. In one report—I will badly paraphrase—my takeaway was that they are necessary but not sufficient at a feasible level. I think that is an important point.

On retention, there was a 2022 paper that found that targeted uplifts worth 8% of gross salary for early career maths and physics teachers result in a cost per additional teacher retained that was 32% lower than training a replacement. That is before you factor in, as I mentioned earlier, that each year an early career teacher stays in their profession, they are perfecting their craft, building their capability and their expertise. That seems worth exploring.

The main message I would like to leave the Committee with, though, is that there is no silver bullet to any of this. The evidence suggests that financial incentives—and you can discuss the exact detail of those—have a role to play, but we will have to tackle some of the other issues as well. As I said earlier, for physics, we think that workloads and teaching out of discipline will be a big factor.

***Deborah Weston:*** Yes, I totally agree with Hari about this. I think back to when I started. When I started, everything was paid—your fees were paid, your travelling expenses were paid, and importantly, your travelling

expenses to your teacher training school. That was important. I am also a trustee for the Culham St Gabriel's Trust, and we get requests for support from people who say they literally cannot afford the fares to get to the teacher training school, or indeed to feed themselves properly. That is a big issue.

One of the different things when it comes to religious education is that because we do not have a bursary, and because only a third of the people we get into religious education come from theology and religious studies— the main subject core—that means we are recruiting from all sorts of other subjects, including from law, sociology and English. We will recruit from all sorts. Of course, if there is a bursary for one of those other subjects or a related subject, then they will go where the money is. That is really important.

You are quite right, Miriam. It is not all about that. Hari has already mentioned workload and teaching out of specialism, and I mentioned earlier about confidence. I think that people's confidence level when they are teaching out of specialism wears them down and makes it more likely that they will leave. I also want to say a word for primary teachers, of course, who teach everything.

You have probably seen the report called "Working lives of teachers and leaders" that came out from the Department this year. That singles out religious education as one of the most affected subjects when it comes to subject confidence. For secondary teachers, 38% of teachers of religious education said that they felt confident, so the rest presumably feel less confident. Geography was 40% and music was 32%. But at primary, the difference between the subject leaders, for example, in their subject teaching of religious education and the rest of the teachers in the school was 18 percentage points lower. That is a big thing.

Again, imagine being you are a primary teacher teaching at school—as I did in east London and so on—and teaching children who come from a specific faith about that faith, and imagine that you do not feel confident. I seem to be echoing Hari a lot here. You mentioned the amount of training that people get in the subject. Primary teachers get on average between nought and three hours of training in religious education. Imagine that position. You have had nought to three hours—a fair number of those were nought—and then you are in that classroom. Our members tell us that wears them down.

Q135 **Miriam Cates:** People are attracted by the bursary. They think, "This is something I would like to try. This is something I could do. Because of the bursary, I can afford to do it". But they teach for a few years and find it is not really what they expected—it is too difficult or they do not enjoy it or whatever reason—so they go elsewhere.

***Ryan Ball:*** Yes, I would not say that they are attracted by the bursary. I don't think that is—

**Miriam Cates:** It makes it possible for them to do it.

***Ryan Ball:*** Exactly. It makes it possible, and there has been a correlation with design and technology, when we did and did not have a bursary. It makes a difference, put bluntly. One of the things that we want to put forward, within STEM subjects—whether people in Government believe design and technology is part of STEM or not is a contentious subject—is that we would like to see the bursary for design and technology increased to make it similar to computing, chemistry, maths and physics. We know of people who have an engineering degree or background. If they are considering going to teaching, it will look more appealing, partly because of the uncertainty over the subject for design and technology and the lack of backing of the subject for a number of years, but also that money will help; it will allow them to be able to teach more comfortably.

Q136 **Miriam Cates:** You could solve this issue of the disparity between subjects by offering an equal bursary. I am not saying that that is the right thing to do, but that would be relatively easy to solve. What is much more complex is the retention and how we solve that.

***René Koglbauer:*** Yes. Very briefly on the bursary, I fully agree that that has had an impact and we can see particularly because languages did not have such a high bursary in previous years and now are back on the considerably higher bursary; we can see an increase by 86.9% in applications, which I think is an indication of that. Whether that leads to retention is a slightly different matter. We have evidence—

Q137 **Miriam Cates:** What could we do? Some people have suggested, for example, golden handcuffs or cancelling someone's student loan after a certain number of years. Are those kinds of incentives fair?

***René Koglbauer:*** The golden handcuffs—I prefer the golden hello element—is definitely something where we have had indication that people stayed at least five years, but I think that the payments were not long enough to have a robust evidence base. That is one of the things that we also think with bursaries and so on. We need a three to five-year strategy, saying "This is what we are going to do" for career advice to prepare those students.

Students are not jumping into teaching at graduation. They are thinking it through in languages, or are already at the point where they make a choice of the year abroad. "Am I going into a foreign language assistant role? Is teaching something that I want to consider?" It is already two or three years ahead. It is important that we have a longer-term strategy.

On retention payments, yes, this is definitely something we need to consider again and plan more widely. We have not seen much success with the relocation allowance that the Government have introduced for international students. I do not think the applications are very high. That is partly to do with the spouse visa issues as well. Another element, however, is a comment from a group of graduates of PGCE courses,

where a high proportion end up teaching in international schools rather than in schools here. I quote, "We don't want to run around like headless chickens all our lives". It is a cultural aspect of the work pressures that we need to address.

Q138 **Miriam Cates:** The biggest issue is job satisfaction. If people were in it for five years, enjoyed the job, felt that they were going somewhere and felt that they could cope with the demands, they would stay regardless of whether there are golden hellos, handshakes and so on.

***Ryan Ball:*** Yes, I believe so. Again, as a teacher myself up until a few years ago, a pay increase is nice—of course it is—but it very quickly gets swallowed up. What I would have loved more was an extra bit of time to do the planning, because I did not have a technician, or to have a few of the students move to another class to make it a safer number of students to teach and a more manageable amount so I can get around to see everybody. That would make a bigger impact to my quality of life as a teacher than a few extra quid in my pocket, which will soon become the norm and not make a difference, as nice as that is.

**Chair:** We have to make some progress otherwise we will run out of the session very quickly.

***Hari Rentala:*** This is a quick one, but it just goes back to the point I have been making, which is that one simple change would be to stop timetabling science and start timetabling separate sciences. You can still do that with a dual award, but there is a growing trend to timetable science and that is what sits behind—

Q139 **Miriam Cates:** Even past year 8, because it is quite normal to do that.

***Hari Rentala:*** Yes.

**Miriam Cates:** Interesting.

Q140 **Nick Fletcher:** It has been fascinating. The research that I did shows exactly what you have just said there. Obviously, wages are a huge part of it—we all need money—but if the workload was reduced slightly and it was a more pleasurable environment, you would get there. Do you think there is a danger that if we did just do it with money—just increased wages—you would end up with teachers who don't want to be there because they are not enjoying it and that could backfire? If you have teachers who don't want to be there and are just there for the money, that is no good. If we kept the wages at a reasonable level but reduced some of the workload and it was a more pleasurable environment for teachers to work with, the kids would do better, the teachers would do better, and we would all be in a better position.

***Ryan Ball:*** I suppose there are elements of truth there. I am not sure anyone would do teaching purely for the money. There are easier ways to earn a living than in the classroom. Talking to our members, it is that quality of life—it is a tough profession. I am sure everybody else on the

panel would agree with that. Again, for subjects like physics, and design and technology, there are added pressures of things like health and safety. There was a primary example in the news a few months ago.

It is tough for teachers and they are forever watching for implications, and this is part of the reason that subjects have been diluted to an extent. To have a student on a lathe or to use a hot glue gun or whatever it might be, there is an apprehension and concern that it could significantly impact you as a teacher. It is a big issue. Money helps—of course it does—but I do not think that is a huge driving factor to keep people in the profession.

**Chair:** I will bring in Professor Glaister and then I will go to Anna, who has been waiting patiently.

***Professor Glaister:*** I am not going to ask Miriam why she is not teaching a chemistry lesson this morning.

I think that incentives are helpful, but I think that it needs to be identified earlier on. If you are doing A-level maths, you do not start a maths degree thinking, "Actually, I will end up becoming a teacher and then I will take this 29K". I suspect that they do not think about that until very late on.

If you want to have highly professional specialist maths teachers delivering on the national curriculum—a high stakes qualification—you need to decide what kind of culture you want within your schools to encourage people to continue, whether that is a golden handcuff or so on. You might want some kind of financial incentive to cover the cost of their studying, which might include their degree as well, but you want some kind of retention back for that. That is not easy to do. I understand that. But it is mainly about the culture.

You will see there is some input about the advanced skills teachers some time back. This was where you could become an exemplary teacher in mathematics and support other schools as well as your own school, but you did not have to go down the management route. I think that if you are a graduate and you are thinking about all of the wonderful things you could do with a maths degree, and then you think about your recent experience of schools and you think, "What is the career ladder looking like for me, when I don't want to be an assistant head?" For mathematics, it is not that attractive, unless you are absolutely passionate about being a maths teacher.

If you come from Reading for example—although this applies in many areas of the country—it is expensive to live and if you do not have a partner who has a much better paid job, you cannot afford to move there. They struggle to get teachers, even in very good schools. I think that there is an element of finance in this.

I saw something about the teacher pension. Although I am thinking about longer-term career opportunities, pay, professional development and culture, they are not thinking about when they are 65 or whatever, so I do not think that will ever be your inducement.

Lastly, can I point you to the Education Development Trust input on the future teaching scholars. I sit on its national advisory board. Students were doing a maths or physics degree and then they got £5,000 per year, which they had to pay back if they did not continue to teach. They then have a three-year training programme after that and they are basically teaching in schools. I have met many of these young people and they will continue to teach, but they have been given the opportunities and they have seen how maths teaching is not just a drudge, which it can be. Perhaps look at that.

Finally, high stakes, accountability, less autonomy, a big GCSE that was introduced, much more maths, more time expected to deliver teaching it—those are reasons why you would not want to become a maths teacher, because everyone is looking at your maths results, because the Minister says you have to get a level 2 pass, although with comparable outcomes many will not get anyway because that is the way it is built in.

Q141 **Anna Firth:** I will return to the specific courses of subject shortages. We have covered some of this already, but this is an opportunity to add in any extra thoughts that you have. To what extent do the factors driving teacher shortages in some subjects reflect wider drivers for recruitment and retention challenges in the teaching workforce?

We have seen evidence from the Institute of Physics, which talks about the lack of flexible working, and we have heard some evidence on that already this morning. We have also heard about workload. These are factors—terms and conditions, flexibility—that have been recurring themes. Can I hear more about to what extent the problems in your specific subjects are part of these wider problems for the whole profession, please?

***Professor Glaister:*** Can I start with maths? I think that there is a general assumption that if you can do maths—you have a GSCE or, dare I say, an O-level pass—you can teach it. That is not the case. You need more than that. You need a passion for it.

On flexible working, I think, "Would I take up a part-time job if I ever retire?" Well, only if I can do the requisite number of hours in what I think is a reasonable number of days, and that is not possible. Even in high shortage subjects, schools are able to fill up their lessons with a named person, perhaps doing two days a week, but they will be in perhaps three or more days a week and they are not paid for all the time that they are required to be at school, or at least that they would need to be at school. I think that there is an issue about part-time.

Adrian Smith did not write it in the report but he had some challenges about part-time working. Some school leaders said, "Well, it is not possible to be flexible", and he said, "Well, just make it work". That is not about financial incentives, per se, although some schools do recruit more maths teachers than they actually need just to make sure that they can fill their spaces. What opportunities are there for people to do part-time work? You will not want to go in four days to do your engineering. You will want to go in two days because there are other things you want to do in your life. I think that is an issue for maths.

**Anna Firth:** Very interesting. Who wants to go next?

***Deborah Weston:*** Shall I go next? I mentioned this issue of flexible working and also flexible training. We must not lose that element of this as well, so that you can train through a part-time route in the hours that work with family life, perhaps. There was a roundtable hosted by the Maternity Teacher Paternity Teacher Project. I don't know if you have seen that. That was the big thing that came out from the evidence and the research that they had done.

The other thing that we have not talked much about yet this morning is investment in the individual and professional learning. We have talked about confidence and the lack of confidence, particularly if you are teaching outside your specialism, but our members are telling us about feeling invested in with their professional learning. Even though they know that when they start their career they will not know everything there is to know about six different world religions and the non-religious world view as well—you cannot get all that knowledge in your initial training—it is good if you can see that there is a programme investing in you so that you can develop that over a period of time.

The other thing that I would mention about that is the role of subject communities. We are all from subject associations here today. The subject associations very successfully deliver a great amount of continuous professional development for teachers. Many people come in the evenings and at weekends to do things. Last night I was leading a session for early career primary and secondary teachers on subject knowledge, and that was between 4 pm and 5.30 pm. Those kinds of things can help. You will not be surprised to hear me say that investment in those associations would be most welcome. We rely on charitable donations, and you cannot keep applying to charitable trusts for things long-term.

**Anna Firth:** Presumably, that will differ very much from area to area.

***Deborah Weston:*** Yes. NATRE has over 300 local groups affiliated to us, and we support those—getting it out so that the teacher does not have to go far for their CPD. The other important thing that we do not have for RE but does exist in other subjects is hubs. We have a charitably-funded RE hub, which is a partnership between several organisations, including the Religious Education Council of England and Wales, NATRE, the

Association of RE Inspectors, Advisers and Consultants, and several others.

That is good because it gets people in their local area able to be with other people who are facing the same issues, whether they are early career teachers or more experienced teachers. Not having funded hubs for religious education makes it harder for RE teachers to get that kind of support. Investment in professional learning is a big help in retention.

**Anna Firth:** Professional networking is what you are saying?

***Deborah Weston:*** Professional networking, yes.

***Ryan Ball:*** I would like to echo that very much. I think that most teachers, if not every teacher, wants to do well. They are in the classroom and they want to do the best they can, whether it is in their specialism or not. Where you have good professional development in a school, you feel valued and you are more likely to stay. I speak from my own experience with that as well. Where there is training from subject associations and elsewhere, it is tough to make it financially manageable for teachers but also at times that suit them as well.

Similar to what Deborah was saying, we run events in the evenings and weekends. We do bite-sized, one-hour sessions during lunchtimes. We hate doing it because it is the time that teachers need their lunch, but they are crying out for these things so we are trying to fill gaps where we can. Having funding with things like that is important.

Again through design and technology, the subject changed at GCSE a few years ago and it all fell under one umbrella. You had textiles trained teachers that now have students within their GCSE class that want to make things out of composite materials or they want to do welding, and it is like, "This is really out of my comfort zone". A lot of the time they have not had that additional training to enable them to do that. Again, we know of the impact that will have on the classroom for the students and as a professional where they feel that they are not doing a satisfactory job for their students.

***René Koglbauer:*** I think that workload, pay incentives and so on, and flexible working, as Deborah mentioned, would be the same as for languages. Another point I would like to make is about the contractual situations for ECTs. Some ECTs only get a contract for one year. It would actually make much more sense funding schools so that an ECT has two years guaranteed in that school so they can finish the early career teacher two-year programme with that school. That could be another way of us looking at that, together with the workload of ECTs. Ultimately is a 10% reduction really sufficient? It should be 20% in the first year and 10% in the second year, rather than 10 and five at the moment.

I think that for languages, at a local level, it depends very much on how supportive a senior leadership team is of the subject itself—whether you

feel supported by your senior leaders or constantly demoralised because of your results and having these challenge meetings around the results. There is a whole inquiry and discussion with Ofqual around severe grading and so on. It is also that whole question about getting the joy of teaching languages—the wider aspects that language teachers always enjoy, with trips, taking people, showcasing them and making that much more straightforward and support of that in the system.

The final point is that I think that we need to challenge ourselves with this culture of formal lessons outside of formal teaching, outside your normal curriculum time—booster courses that happen in the evenings, mornings, at lunchtime, in the holidays. Teachers are invited but also somehow expected to help those students to ultimately achieve their GCSE, A-level and so on results through those offers.

***Hari Rentala:*** First, we agree that the issues that physics faces in teacher recruitment and retention are part of a much bigger picture. I would like to echo my support for many, if not all, of the comments that my colleagues on the panel have made today, particularly on the importance of access to meaningful CPD and the role that can play in helping teachers feel like they are growing in their profession, growing their expertise. It is ultimately a vocation and people want to feel that they are building their professional capacity over time and becoming more expert in what they are doing. I think that it is also fair to say that physics is often, not always, more disproportionately affected. We have already talked about different recruitment figures. We tend to be the second poorest in performance against the target.

**Chair:** What is the first?

***Hari Rentala:*** Computing. One particular nugget that I would like to present to the Committee, which I am afraid comes back to the teaching outside of discipline point, is that we have seen historic analysis that shows that around a quarter of physics graduates go on to teach maths rather than physics. That is also another interesting stat, probably not with cause and effect, but I think that it illustrates the point. If we could tackle some of those issues, all these will make incremental step changes towards a better set of outcomes.

Q142 **Anna Firth:** Thank you. You have all mentioned a whole array of interesting and important points about retention, which leads to my next question. How well do we really understand the reasons why subjects are struggling, given that we have all heard and learned a whole raft of new things today? Is there another piece of work that should be done to try to pull all these threads together to give us a better understanding?

***Professor Glaister:*** An independent external inquiry into teacher workforce needs, such as carried out by Cockcroft and Smith. You have talked about CPD. The Chair knows about the maths futures programme. The Royal Society, which is quite old, has an advisory committee on mathematics education, on which I sit, since it was first chaired by Sir

Adrian Smith has written a lot about professional development, and maths-specific professional development, which you will have heard and I can give you more on.

I think that if you took many teachers across the country and you showed them that, they would not recognise this as something that is available to them. The Chair will know about the Maths Hub. There is a lot of money going into professional development, but it is not being accessed because, although the courses are free, there is just not the capacity in the system. I think that you need an inquiry of some sort.

You are doing a great inquiry of course, but it needs to be acted upon by others, and an independent inquiry may be needed to do that and to really understand why we do not retain people teaching maths. It is due to many things, but I think that workload is high on the agenda.

Q143 **Anna Firth:** Thank you. That is helpful. The next question is another one that we have covered to some extent, so I would like additional comments, please. Evidence suggests that more competitive pay in other professions may be a factor behind shortages of teachers in science, maths and computing subjects. For subjects such as design and technology or modern foreign languages, is pay also a significant factor, or are there other issues beyond those that we have already identified that we should focus on?

***Ryan Ball:*** From what we have seen—and the sectors that are potentially related to design and technology are varied—part of it is to do with the potential future career paths elsewhere. Within teaching we always have had a small number of teachers as a percentage who go on to senior leadership positions, for instance as headteachers and so on, but within, let's say, an engineering sector or a creative sector you have a lot more flexibility as to where you can go within that profession and potentially climb the financial ladder fairly quickly.

I will refer back to previous comments that 9 am until 3 pm as a teacher just simply does not exist; 9 am to 5 pm in a "normal" job does exist. A teacher going to their car without a pile of boxes or books—what is happening? Teachers work weekends, late nights, evenings and try to fit everything else within that. It is a tough profession. I think the pay is one aspect, but it is about that quality of life that we keep referring back to, which is probably the ultimate factor, in our opinion.

Q144 **Anna Firth:** When you are comparing pay rates with other professions, are you comparing the whole package, including holidays and pensions, so you are comparing like with like? Professor Glaister mentioned earlier that the pension is not a great inducement because people are not thinking about the pension, but of course it is a big advantage for many teachers.

***Ryan Ball:*** Sorry, I will interrupt with just a very quick point on that one. A lot of it again is the flexibility. I was a teacher straight out of university.

In the last four years, I have not been. It has enabled me to go to school events, to see my children in sports days and things like that, and to do various appointments that I would not normally have the opportunity to do. You simply do not get that flexibility as a teacher, even down to you must take your holidays at certain times of the year. That is a grand, sweeping thing that we would need to look at but that, more and more I think post covid, has played a significant role. People value the flexibility that comes potentially with other jobs that you often do not get in the teaching profession.

***René Koglbauer:*** In terms of languages, I fully agree with you in terms of the wider impact of the school culture being important. Lots of language teachers go into it because they are passionate about languages. They are passionate about developing themselves. We regularly have as an association hundreds of people coming together on Saturdays at events or out-of-hour CPD events. There is a real passion for developing themselves.

Pay is obviously important, but when the pressures are too much—where they are running around as headless chickens not knowing what to do, but also not being able to put their own children at home first any longer—then that is where we can see now even committed people, after 20 years, looking at alternatives. Sometimes the alternatives are looking at getting a part-time job with a primary school, and becoming a primary expert in that sense, or maybe going into other schools where they are looking for a German or a Spanish specialist, or colleges, or some other companies that need some kind of language upskilling of their staff to do business with companies abroad. There is still that passion for languages, but it is the culture of schools that we need to look at.

***Professor Glaister:*** Pensions are important, but of course the pension is dependent on how much you earn, so if your ceiling is just main pay scale 3, it is not going to be vast, and many teachers I know work very long hours—evenings, weekends, holidays and so on—although we do not have any data on that. If we are looking at 8,000 maths graduates as what we would hope would be a significant proportion of people wanting to teach, what else is on offer to them?

Data is everywhere. I am doing a lot of work on data science and professionalisation, degree accreditation and so on. It is a very uncertain future. If someone has a maths degree and goes into this area, they do not know what the pensions are going to be. They do not know what their career is going to be, but they think it is going to be exciting and rewarding. They know what teaching at the moment looks like so, unless we change that, it is going to continue to be unattractive compared to something where they are clearly taking a risk.

In terms of your question, it is very difficult other than changing that culture, as to what you can do, but you are not going to solve the problem with pensions. Probably more pay is not going to solve the

problem. Better career paths, more autonomy and being more valued as a teacher would help.

***Deborah Weston:*** I want to go back to your previous question as to whether there is any more work or more research that needs to be done. I am thinking about the research into data—about where it is working. The retention rates are different, we know, literally in different schools, so what are they doing that makes their teachers stay? I think that is important, because there are examples of some excellent practice where if you ask the teachers about how they feel about their working lives and so on, these are things that can be learned across the piece, if we can identify good practice.

**Anna Firth:** That is a helpful, positive point to finish on.

**Chair:** Thank you. I am going to come to Mohammad, and what works is something that the Department talks about quite a lot. They tend to talk about it in a very academic sense in terms of what works in the classroom, but what works in terms of teacher retention is a piece that deserves further study, absolutely.

Q145 **Mohammad Yasin:** My questions are around the levelling-up premium, early career payments and reclaiming student loan payments. I am concerned that outside London and the south-east, the east of England, where my constituency is, has the highest number of teacher vacancies. Retention especially is a problem in disadvantaged schools, and areas in the north-east, west midlands and the east of England are substantially less likely to have teachers with the relevant degrees teaching shortage subjects.

The Department has targeted some financial incentives to specific local authorities. What evidence is there around regional variations of subject-specific shortages, and how effectively is the Department targeting its interventions?

***Deborah Weston:*** I don't want to necessarily repeat what I said before about the regional variations. The hard facts are that there simply are insufficient trainees to address the shortages. Somebody mentioned earlier what is the methodology in deciding where these incentives go, whether they be bursaries or loan forgiveness schemes or whatever? Where is the rationale behind which subjects get it and which subjects do not?

If you read the script, if you like, on why certain subjects get it, it talks talk about historical under recruitment. Well, religious education, nine years out of the last 10—that is fairly long and historical.

A recent letter that one of the parliamentarians wrote to the Minister came back with the answer, "Well, we are prioritising English baccalaureate subjects". Well, if the shortage is in another subject in addition to the English baccalaureate, that is where support should go. There are just insufficient people to address the jobs and when I looked

last summer—is it still summer?—when you look at the jobs advertised you can see the desperation by the repeated, very expensive adverts going in the press for jobs, and they are just not being filled. You can see the teachers knowing that they are about to start the September term, yet again without that specialist. I think this applies to most of our subjects and it is something that needs to be urgently addressed.

What goes along with that is how we recruit and how the Department is going about advertising teaching. We have advertisements on the television from time to time and so on. Again, you may see a science laboratory, but different subjects need different ways of doing this kind of promotion of teaching. For example, we recruit quite a lot of people from black and minority ethnic groups, and we must think about how we target the advertisements, the incentives and so on, to what works with that subject. I have said that phrase again. It is different. One-size-fits-all is clearly not working.

***Ryan Ball:*** It is very different per subject, and I am not going to speak about other subjects. I know very little about them, but for design and technology we need to make it an appealing subject, and that is for parents and students.

For some figures, within design in our country, design contributes £97 billion to GDP. If you put engineering into that as well, which is an obvious sector for design and technology, the figure rises to £600 billion. There are job shortages left, right and centre, in the sectors that are linked to design and technology up and down the country and for students to access this subject they could almost walk into a job and have a pick of different positions, really exciting cutting-edge positions, across the country.

There is a regional variation. We did a report with the Education Policy Institute a few years ago and I would just give you the bottom local authorities with the lowest rate of entries to design and technology GCSEs. They are Middlesbrough at 4.4%, Barnsley, Hull and South Tyneside. They have the lowest number of students taking the subject. That just seems wrong.

**Chair:** There is a huge engineering culture in those areas.

***Ryan Ball:*** You would think so. If we flip it to the top we have Herefordshire, Dorset, South Gloucestershire and Somerset as the top four. There is definitely regional disparity there and we need to do a massive publicity drive, I suppose, for the subject of design and technology.

***Hari Rentala:*** I will come in very quickly, and I am not going to disagree with anything that has been said by my colleagues on the panel. I recognise the issue with regional disparities. Another way of looking at it is—and I will just remind the Committee of the statistic that we mentioned in our written submission—that 70% of A-level physics

students come from just 30% of schools. Looking deeper into the numbers, we think around 300 schools more likely to be from deprived areas send no one at all on to A-level physics. It is an issue.

There are a number of factors at play here: local economic conditions, how attractive the school is, whether it is seen as a struggling school, and so on. Without repeating myself extensively, what I would point the Committee back to is that we are not going to be able to break the cycle of the isolated, lone physics specialist in a school who has not had a great experience over their first few years and potentially leaves just by drawing on existing recruitment pathways. That is where there is merit in looking at the retraining pathway, where you have teachers already in that school. They are where the need already is and if you can support them to retrain you are matching them up with the need for that specialist in that school.

Q146 **Chair:** Physics, very specifically, is one of the subjects that is supported by the levelling-up premium. Are there any early indications of whether we are seeing it make a difference?

***Hari Rentala:*** I do not have data on that, I am afraid. All I would be referring back to is what we know about other incentives and how they are working. I do not have anything specific to that.

***René Koglbauer:*** I don't have anything specific to say in terms of any evidence of whether payments are already making a difference. The perception I have at the moment is that, with all those initiatives, it is a bit like there is a problem and we put a bit of plaster on it. What we need to think about is stepping back a bit and asking how we want to have, as a country, this profession as teachers generally funded and supported and then look at subject-specific aspects—for instance, saying, "Languages need that, D&T need that on top of it because of recruitment."

At the moment it seems whenever there is a problem, "Oh, what can we do? Which initiative?" and then we get to this point where in five years' time we drop the initiative because we are not quite sure if it has worked, because we do not have data on it. We need to think about it more long term.

***Professor Glaister:*** Subjects, as are often the case, are down to parliamentary cycles, as is the curriculum and so on. That also affects things. You have heard advice that the teacher recruitment and retention strategy should be revisited. It is easy to say that money is the answer. There will be a finite pot of money that you can give to education and if it turns out that you cannot deliver on the number of maths teachers that you want and need, specialist maths teachers, you must pare down what you can do.

A business may be able to invest, pay people more and then if it dies it is no longer there, but we cannot afford to do that. We know that maths,

quantitative skills, data, all underpins much of what is happening. If we want a good education system in mathematics you might have to pay more for early career payments, if they are seen to be working. You might need to have greater inducement, but I would suggest that you need to ensure that people stay in the profession. You do not want to force them to be there, so some kind of financial penalty if you do not might be the answer.

***Hari Rentala:*** Sorry, I forgot to mention earlier, there is another thing that we have not discussed to date, which might be helpful to put on the table. I mentioned earlier about the slight stickiness of qualified teachers once they qualify and join a school. One of the interesting features of the recruitment landscape at the moment is that there is a huge target in physics that we missed, very badly.

That target is only managed at a national level. There is no management of that target at a regional level. Basically, providers of initial teacher training follow the local demand for what graduates want to apply for. If there was a way of passing some degree of that target through to providers, probably through some sort of financial incentive, which could take lots of different forms, that might have a meaningful impact as well.

Q147 **Mohammad Yasin:** Hari, if I stay with you, to what extent are the targeted financial incentives—including early career payments and student loan reclaim schemes—helping to address concerns around pay competitiveness for science, technology and maths, or STEM, teachers?

***Hari Rentala:*** I don't think I have a lot more to add to what we have already said on this topic. Pay competitiveness is a factor in physics. Other pathways open to graduates could include what appear to be very exciting roles in R&D-intensive industries, quantum, green tech and so on. It is a factor, but I don't think it is the principal one.

I guess what I was just talking about now is looking at financial incentives in a different context, not financial incentives for the individuals but passing those incentives to providers to drive them and to some extent fund them to recruit and target the shortage subjects in a way that they are not currently.

***Professor Glaister:*** I was going to mention having a strategy with incentives. You talk about ITT. I talked about ministerial responsibility for this, but also in terms of the providers. I think that would go some way to address this issue. I agree with Hari on those points.

Q148 **Chair:** We have had a tremendously rich discussion and I have allowed it to run on a little bit, so I am grateful to all witnesses for staying. I have a final question. We talked a bit about the ITT and the so-called golden thread reforms. I have heard loud and clear—and we have heard in other sessions as well—about the interest in more subject-specific content within ECF. I have seen some good examples of that, where the mentoring has been used to provide that subject-specific support, but of

course it also requires time, of which senior teachers in particular are so short. I think that is definitely a conundrum.

Is there anything specific that you think could be done with the Government Department reforms for teacher training to support the retention of subject-specialist teachers by helping them develop their expertise within their subject? Also, I was quite struck by one of the points—I think both Deborah and Paul made—about the importance of career progression within subjects. Is there more work to be done on that?

***Deborah Weston:*** Yes, we have been doing some research into the early stages, because the ECF is in its early days. I mentioned that NATRE run a programme called New2RE, which has targeted over 300 people on that list, both primary and secondary. We did a bit of a flash survey to see how they felt it was going in terms of subject-specific and essentially I did not find a single one of those people who reported who had any subject-specific training in their first year. That was quite alarming.

In terms of their rating of that first year of the ECF, two thirds rated it as either poor or very poor in terms of subject. As we move into year two, I would hope to see that changing, but if you think about what we have talked about in terms of confidence in being in the classroom in those early years, if you are not in command of your subject or at least not in command of the development of your subject in that first year, you can imagine how that could easily lead to retention issues. I think that does need looking at. The charities and the subject associations are working hard to address that, but it is no substitute for what goes on.

The other thing that is important there is availability of subject expert mentors. I have mentioned that so many schools do not employ an expert religious education teacher at all, and some of those include some of the schools who are providing training. You might even have a geographical area where there is not somebody willing or able to be that mentor. We know from early evidence of the ECF that the mentor is high on the agenda for the success of that training. That is something that needs to be addressed: how do you put the expert in front of that teacher when they are starting their training?

***Hari Rentala:*** I am sure the Committee might have seen a work by Gatsby and Teacher Tapp—the initial evaluation on the early career framework. It is early days, but the early signs are not particularly promising. I am simplifying the numbers slightly but, on balance, as many respondents thought it would be likely to cause people to leave as it would to stay. About half of secondary teachers thought it would add too much to their workload. Half said it would not meet their specific needs and half of science teachers felt the resources should be more adapted to their subject. They are pretty worrying figures.

The nuance I would add to what has just been said is that there needs to be subject-specific mentoring in the context of the sciences. Is it science mentoring or is it physics mentoring? That still applies. The support that is needed is more than mentoring. It is about when you are struggling to get your class to get their head around the idea of circuits and how they work—you might need someone you can reach out to for specific coaching on how you can best teach that issue. That is a little bit more than mentoring and whether the provision now addresses that is a bit of a question.

Overall, we would like to see the subject-specific element of the ECF strengthened. We are doing some work on what an addendum for physics subject knowledge would look like, and we would be interested in taking that forward.

***Ryan Ball:*** I echo what has been said. One of the things that we have from an ITT provider is saying that the subject knowledge enhancement schemes have generally been well received, but when these are done virtually it can have a significant detrimental impact. A lot of the training that is provided nowadays is virtual, for obvious reasons—both cost and transportation—and for certain subjects you need to be in the same room as a colleague. You need to get hands on with it, and at times it is subject to being diluted in some schools for reasons such as this.

It would be interesting to find out more about engineers teaching physics, the success of that and whether that is something that we can look at within our subject. It seems like a common thread of continual professional development, the funding of that and access to that, makes a significant impact, as does having quality mentors in schools. It is almost like a vicious cycle at the moment.

***Professor Glaister:*** You mentioned that you had seen some good subject-specific examples of ECF. I am sure there are. The question is how uniform it is, given that the rationale for the ITT market was consistency. Is there some kind of consistency across the piece?

We absolutely do not understand this as well as we could. Professional development is key, and to cite the Teacher Tapp as well—which I think was reported by Gatsby—of course it is very early days for the ECF. Also you do not know when you have just started training. You think, "There are lots of things I don't like about teaching. It is hard work" and you might cite that as an example. It is a question of what they are expecting. But if it is showing them the way—that this is what it could look like—it is not great news. If, early on, teachers could realise this is something they could continue to enjoy—the subject they did at an undergraduate level and then trained to teach—and will continue with through professional subject-specific professional development, that would be good.

On the EDT submission on the future teaching scholars—a great set of people who are passionate about teaching. One of the things I keep

pushing in their direction is that they will have lots of career opportunities in the future on subject professional development. I can talk about subject associations, but particularly about NCTM and the Maths Hubs. But what I hear as chair of the strategic board for a Maths Hub—I know quite a lot of the work that is going on—is that there are issues with the ECF. You don't want to put anything in these young people's way to think, "Oh, it might be better to go to work for PricewaterhouseCoopers"—or in some data-led industry.

***René Koglbauer:*** Chair, I have a slight conflict of interest in terms of ECF and NPQs because the university is involved with one of the providers. As an association, we have tried to work with some of the NPQ providers who have some language-specific case studies in their materials and the same with ECF.

I want to come back to a point that you made earlier, Chair, around the initial teacher training. What we just need to remember is that undergraduates have focused on language teaching, learning the language and learning a culture, and they have a year to engage on the ITE programme on how to teach that knowledge and those challenges. If you think that the majority of courses have about a handful of days—a dozen days—focusing on the subject-specific aspects of how to teach your subject, and then everything else is reliant on in-school placement, we may have the balance wrong here. I am referring to examples in Austria, where you would have four years of parallel engagement after learning your language and thinking about how you teach it from the start. That is something we may want to consider.

**Chair:** Thank you. It has been a very useful session. I am going to close it at that point. I know members will have other things that they need to get on to, but I am very grateful to all of our panel.