News story: The new robot helping clean up Sellafield

The ‘Avexis’ will help dislodge and clear waste from the Magnox Swarf Storage Silo.

Watch the robot enter the plant for the first time

It has been developed by Cumbrian firm Forth Engineering with support from the University of Manchester.

The company was launched in 2000 by former Sellafield apprentice Mark Telford.

The Maryport business is now a global specialist in remote tooling, deployment methods, and sensor systems.

Mr Telford said:

> Having Sellafield on our doorstep gives a huge advantage.
>
> It’s a testbed where we can develop unique skills and technologies.
>
> The site needs innovative technology to undertake engineering tasks in harsh environments underwater.
>
> Successfully deploying our technology at Sellafield means we can then transfer it to other industries like marine and oil and gas which are looking for similar products.
>
> The Avexis is already generating interest from potential clients overseas.

The Magnox Swarf Storage Silo was built in the 1960s to store waste from the UK’s earliest nuclear reactors. It closed in 2000 and has now been prioritised for clean-up by the Nuclear Decommissioning Authority (NDA).

Rebecca Weston, Strategy and Technical Director for Sellafield Ltd, said: “The Avexis is a great example of the supply chain helping us to reduce the UK’s nuclear hazard faster, cheaper and more safely.

“And, on top of that, companies are developing products and skills that can be exported all over the world.”

The Avexis offers the ability to ‘see’ inside the silo via cameras attached to its body.

It can also clear away small bits of waste clinging to the silo wall.

Its key feature is its size – it is small enough to fit through spaces of just 150mm space.

It is the first robot of its kind to go from concept to market within five years. At just £10,000 it is also the cheapest of its kind.

News story: Education Secretary announces first new T levels

The Education Secretary, Justine Greening, has today (11 October) announced the first three T levels, in Digital, Construction, and Education and Childcare, which will help deliver a generation of home-grown talent post-Brexit.

The first of the new qualifications, with content developed by leading industry professionals from companies including Rolls Royce, Fuijitsu and EDF, will be taught from 2020, with the full set of T levels introduced by 2022.

First announced in 2016 and backed by £500million every year in additional funding the qualifications are a key milestone in transforming technical education in the UK and extends the offer for young people to study a technical qualification at level 3 – equivalent to A levels.

Education Secretary, Justine Greening said:

> We are transforming technical education in this country, developing our home grown talent so that our young people have the world class skills and knowledge that employers need.
>
> As we prepare to leave the EU, it is more important than ever that we create an outstanding further education and skills system, giving all young people the opportunity to fulfil their potential and deliver a better future for our country.
>
> As part of making sure that the technical education ladder reaches every bit as high as the academic one, I want to see T levels that are as rigorous and respected as A levels.

Each route groups together related occupations which require common knowledge, skills and behaviours. These routes are further broken down into a number of specialisms, clustered together in a straightforward way so that young people can see a clear path to the occupation of their choice.

The content of T levels will be developed by newly appointed panels

comprising industry professionals and employers – including EDF, Rolls Royce, Fujitsu, Lloyds, Morgan Sindall, Skanska and Morphy Richards – ensuring that they have real credibility. The Government is today confirming that panels have been launched across all 6 routes for delivery in 2020 and 2021.

All T level programmes will also include a substantial, high quality work placement so that students can apply their learning in a real workplace environment.

Fujitsu's non-executive Chairman, Simon Blagden, said:

> I'm delighted to see the progress that the Department for Education is making on the implementation of T levels. The introduction of these technical programmes will provide young people with skill sets that are valuable and relevant to employers, helping to create skilled employment opportunities for school leavers.
>
> In particular, the support being put in place for work placements will be crucial in ensuring that students are able to gain experience of a work environment, helping them move from education to employment in a more seamless manner.
>
> The decision to introduce the new programmes came after an Independent Panel on technical education, chaired by Lord Sainsbury, in 2016 found that the existing system was too complex and included too many qualifications, which did not provide young people with the necessary skills to excel at work

Lord David Sainsbury, chairman of the Independent Panel on Technical Education, whose report led to the reforms said:

> I am delighted the government is pressing ahead with these essential reforms to technical education. T levels will increase the life-chances of many thousands of young people, while at the same time helping to ensure British industry remains competitive.
>
> Now that the Government has issued its Action Plan it is essential that everyone involved starts preparing for the introduction of T levels. Government, the education sector, industry, LEPs and Combined Authorities now need to put in the necessary resources and effort, and not wait until the last moment before taking the necessary action.

David Hughes, Chief Executive of the Association of Colleges said:

> The publication this week represents a really important step forward for technical and professional skills training and education.

> Our future economic and social prosperity rely on more people having higher technical skills and education – both to help improve productivity and to help people realise their talents and ambitions.
>
> The new T levels will need to fight hard to gain recognition and to be valued, but this announcement is a good first step. I look forward to working with the Government on developing the pathways from Level 2 through Levels 3, 4 and 5 which are needed for success.

Neil Carberry, CBI Managing Director for People policy, said:

> Businesses will be encouraged by the positive progress on the introduction of T levels, though there is still much for companies and the Government to address together. It's important that these new technical routes are woven into the wider education system from the start, to ensure they are respected and are seen to have the same quality as A levels.
>
> There has never been a more important time to deliver world class training for our young people in every part of the UK. Investment in skills by employers and the Government, working in partnership, is key to giving young people the opportunities they need to succeed.

The successful completion of a T level will equip students with the technical knowledge and practical skills necessary to enter skilled employment.

The full T levels Action Plan is available here

We can confirm today that the following chairs for T level panels have been appointed:

- Edward Sallis; Education Consultant, Education and Training Foundation's Expert Panel on Professional Standards
- Dayle Bayliss; Dayle Bayliss Associates LLP
- David Matthews; Institute of Domestic Heating and Environmental Engineering
- Julian Weightman; Boardercraft Group
- Julie Oxley; Digital Care Consultancy
- John Meech; Fujitsu
- Anna Withrington; IBM
- Mike Westlake ; Autodesk
- Peter Winebloom; EEF Ltd
- Probash Chowdhury; GlaxoSmithKline
- Jane Hadfield; Health Education England
- Hilary Jeffreys; Consultant
- Weiyen Hung; Bank of England
- Maura Sullivan; Banking, UK International Wealth Management

- Cassie Williams; 39 Park Square

Statement to Parliament: Planning Act 2008: application for the proposed Silvertown Tunnel development consent order

Ministerial statement regarding an extension to the decision deadline for the proposed Silvertown Tunnel.

I have been asked by my Right Honourable Friend, the Secretary of State, to make this written ministerial statement. This statement concerns the application made by Transport for London under the Planning Act 2008 on 29 April 2016 for a proposed development known as Silvertown Tunnel.

The application will allow for the construction of a new twin bore road tunnel to pass under the River Thames, providing a new connection between the A102 Blackwall Tunnel Southern Approach and the Tidal Basin roundabout junction on the A1020 Lower Lea Crossing, London.

Under sub-section 107(1) of the Planning Act 2008, the Secretary of State must make his decision within 3 months of receipt of the examining authority's report unless exercising the power under sub-section 107(3) to extend the deadline and make a statement to the House of Parliament announcing the new deadline. The Secretary of State received the examining authority's report on Silvertown Tunnel on 11 July 2017 and the current deadline for a decision is 11 October 2017.

The deadline for the decision is to be extended to 10 November 2017 (an extension of 1 month). This extension is to enable further consideration of the recent responses to the Secretary of State consultations on the scheme which relate to the updated UK plan for tackling roadside nitrogen dioxide concentrations published by government on 26 July 2017.

The decision to set a new deadline is without prejudice to the decision on whether to give development consent.

Press release: Foreign Secretary statement on Iran nuclear deal

Foreign Secretary Boris Johnson has reiterated Britain's support for the Iran nuclear deal ahead of a US deadline to recertify Iranian compliance.

Mr Johnson yesterday (Tuesday 10 October) held phone calls with US Secretary of State Rex Tillerson and Iranian Foreign Minister Javad Zarif to underline the continued benefits of the Joint Comprehensive Plan of Action (JCPoA) for all sides.

In his call with Mr Zarif, the Foreign Secretary also raised concerns about the detention of all dual UK-Iranian national detainees, including Nazanin Zaghari-Ratcliffe.

The UK, France and Germany are clear that while Iran's destabilising activities in the region are unacceptable, the regime has upheld its nuclear commitments.

Today (Wednesday) the Foreign Secretary will meet Iranian Vice President Dr Ali Akhbar Salehi in London to press for Iran's continued compliance with the JCPoA. Dr Salehi is head of Iran's nuclear agency and will be in London following his attendance at a nuclear conference in Rome.

Foreign Secretary Boris Johnson said:

> The nuclear deal was a crucial agreement that neutralised Iran's nuclear threat. The UK supports the deal and stresses the importance of all parties continuing to uphold their commitments.
>
> We have made no bones about our deep concern at Iran's destabilising regional activity, including its ballistic missile programme, but I remain steadfast in my view that the nuclear deal was an historic achievement that has undoubtedly made the world a safer place.
>
> It was the culmination of 13 years of painstaking diplomacy and has increased security, both in the region and in the UK. It is these security implications that we continue to encourage the US to consider.

Foreign and Commonwealth Office Political Director Karen Pierce also attended a meeting with French, German and EU counterparts on Tuesday evening to discuss the European position on the JCPOA. On 25 September, UK Ambassador to the US Sir Kim Darroch spoke at the Atlantic Council with European counterparts about the importance of the agreement, and he continues to meet senior US politicians to outline the UK's position.

Further information

Speech: HMCI's commentary: October 2017

What do we understand to be the real substance of education? When we think about what the core purpose of education is, what comes first to our minds? In recent years, we have thought a great deal about the role of leaders and the importance of teaching. We have also given a great deal of our collective time to exam grades and progress measures. These are undoubtedly important. However, at the very heart of education sits the vast accumulated wealth of human knowledge and what we choose to impart to the next generation: the curriculum.

Without a curriculum, a building full of teachers, leaders and pupils is not a school. Without receiving knowledge, pupils have learned nothing and no progress has been made – whatever the measures might indicate. This is why exams should exist in the service of the curriculum rather than the other way round. Exams are our best measure of what has been successfully transmitted to the pupil's cognition. We must not forget, however, that any test can only ever sample the knowledge that has been gained. It is the whole domain that is of matter to the pupil.

A good school achieves a careful balance. Balance is the constant challenge when schools plan. Time is limited. Therefore choices need to be made about what to do when, how much depth to pursue, which ideas to link together, what resources to draw on, which way to teach, and how to make sure all pupils are able to benefit as each new concept, construct or fact is taught.

Most importantly, these decisions must be rooted in a solid consensus about what education should deliver for each pupil. What is the body of knowledge that a child needs so that they will flourish in the future and not be left behind? We know the level of academic achievement that pupils are reaching in some of the Asian economies for instance. These countries are already challenging our competitiveness. It is now three years since the government's new national curriculum set out ambitious aims for that body of knowledge; it is my view that this represents a set of standards any country would be proud to aim for. That said, within this framework, and for those schools setting their own curriculum, important ongoing decisions must still be made about how the curriculum will be implemented.

Both the new SATs at the end of key stage 2 and revised GCSE and A-level qualifications are a marked improvement on their predecessors and, in my view, are set an appropriate level of rigour. There need be no tension between success on these exams and tests and a good curriculum. Quite the opposite. A good curriculum should lead to good results. However, good

examination results in of themselves don’t always mean that the pupil received rich and full knowledge from the curriculum. In the worst cases, teaching to the test, rather than teaching the full curriculum, leaves a pupil with a hollowed out and flimsy understanding.

Earlier this year, I commissioned a research programme to broaden our understanding of how curriculums are implemented in our schools, particularly the national curriculum as a key government policy. This was one of the main research priorities of my first year as Chief Inspector. One of the aims of this work was to challenge ourselves, as well as schools, about whether Ofsted has always recognised what is best in curriculum design, development and implementation. If we have not, I wanted to know whether inspection has played a role in bending the curriculum out of shape.

There has been great interest shown in this work from the wider education sector. I have been surprised and pleased by the level of interest and by how positive people are about this work. In the light of this response, I want to share some of the emerging findings.

We have completed phase one of the review, but the findings I share here are preliminary. Phase one has shown that we have only begun to scratch the surface of this complex area. Phase two of the study will continue into the autumn and spring terms of this academic year. We intend to publish our full findings in late spring.

The first phase of the review has included:

- research visits to 40 schools
- review of routine school inspection reports
- focus group discussions in 5 regions with headteachers of good and outstanding schools
- questionnaire responses from Ofsted’s Parent Panel
- desk-based retrieval from school websites

We deliberately approached this first phase in an open-ended and exploratory way so as not to prematurely close down areas of interest. We are using the initial findings and patterns from the emerging data in this phase to develop questions that are more focused. These questions will be explored further in phase two.

Curriculum knowledge and expertise

A striking conclusion that we have drawn from the findings is that, despite the fact that the curriculum is what is taught, there is little debate or reflection about it. School leaders and inspectors discussed the timetable in each school. The timetable is important. It is, however, not the curriculum. Apart from the timetable, there was an absence of other tangible reference points to get to grips with the complex business of curriculum planning. It was evident from these conversations that took place between inspectors and school leaders that there is a lack of clarity around the language of the curriculum.

For example, the idea of ‘skills’ was liberally used in many contexts. Very rarely was it clear whether the meaning was subject-specific, for example reading skills. Other uses included personal skills, such as the ability to work in a team, cognitive skills, such as critical thinking, or life skills, such as how to pay a bill or apply for a job. There were many other examples of terms where the meaning was woolly, such as progression, enrichment, questioning and repetition.

It is certainly possible that this ambiguity and lack of shared understanding expose competing notions of what curriculum means across the sector. However, the most likely explanation is that this arises from a weak theoretical understanding of curriculum. This was confirmed by school leaders, who said that there was a time (long ago) when teachers were taught the theory that underpins curriculum planning. Over time, this competence across the sector ebbed away. This may be because it was generally not thought to be so important after the establishment of a national curriculum. There has been a move over the last three years to a slimmed down national curriculum focusing on a rich foundation of knowledge. This will, I believe, help to reverse this trend. However, school leaders and teachers have to be supported to seize this opportunity. Ofsted has a role to play here too.

Primary school leaders reported that recruiting staff who could design a curriculum was becoming increasingly difficult. Some headteachers thought that too much of what trainee teachers currently learn is focused on teaching to the English and mathematics tests. Little attention is given to developing more rounded curriculum knowledge. Indeed, a couple of headteachers indicated that they could divide their staff into those who were strong in curriculum planning – those who trained a fair time ago – and those who were not. Some schools leaders said that it was difficult to deliver continuous professional development (CPD) related to curriculum design because of the current financial climate. These leaders also identified reduction of local authority support services as playing a role. However, these factors cannot account for the decline in expertise, as some multi-academy trusts clearly place a high premium on thoughtful, comprehensive curriculum planning.

We have seen 3 important consequences of a reduced understanding of curriculum.

1. First, the primary curriculum is narrowing in some schools as a consequence of too great a focus on preparing for key stage 2 tests.
2. Second, leaders have often misunderstood the purpose of key stage 3 and the new GCSE assessment criteria.
3. And third, the intended curriculum for lower-attaining pupils in some secondary schools was often associated with the qualifications that count in league tables but not with other knowledge they should be acquiring.

It seems unlikely that any school has prioritised testing over the curriculum as a deliberate choice. It is likely that, in some quarters, testing has come inadvertently to mean the curriculum in its entirety. If it is true that curriculum knowledge has weakened across the sector over time, it would explain why there has been a merging of the concepts of testing and the

curriculum. If this is the case, it is despite the concerted efforts of the Department for Education (DfE) to make performance measures more nuanced, with the development of Progress 8 and the EBacc, for example. Inspection may well have unintentionally contributed to the shift by reinforcing the focus on measures. Measures only ever provide a partial picture: inspection should complement, not duplicate, that picture.

Narrowing of the primary curriculum

I have previously commented that where school leaders and teachers have an overt focus on performance tables, this can lead to mistaking ‘badges and stickers’ for learning and substance. Acing the test trumps gaining the knowledge. In addition, where there is little shared curriculum thinking among staff, it becomes increasingly difficult to moderate the influence of the test syllabus on primary curriculum design.

Making sure that young people master the basics of English and mathematics must be the focus of primary school and the public have a right to know that this is happening. In this respect, I believe the new SATs play an important role in highlighting how well schools are delivering the primary curriculum. But that means schools should view the tests as existing in service to the curriculum, rather maximising test scores at the expense of children’s learning.

Fourteen of the schools we visited were primary schools. Leaders of 11 of the schools were explicit that they carried out some form of preparation for SATs. Preparation time for the tests varied between a few weeks in the lead up to the exams and a longer sustained period, typically from the end of the Easter holidays, but sometimes from Christmas. The leaders of one school informed inspectors that their pupils sat test papers every week in Years 5 and 6. Testing in school clearly has value. This kind of test is intended to measure the child’s ability to comprehend. However, the regular taking of test papers does little to increase a child’s ability to comprehend. A much better use of time is to teach and help children to read and read more. Additionally, the books that teachers read to children need to be more challenging than those the children are picking up themselves.

Generally, primary school parents said that preparing for tests was cutting into their child’s learning time. Around half of the parents who responded to our questionnaire (n=163) believed that test preparation had reduced the teaching time available for the other foundation subjects or for reading for pleasure. Furthermore, a small proportion of parents suggested that, in their child’s school, the focus on past papers, booster sessions and test-related homework was too high. In a few cases, this demotivated their child.

A few of the leaders we spoke to suggested that the scale of change in the sector was particularly difficult to keep up with. To cope with workload issues, they had chosen to push curriculum development down their list of priorities. For instance, leaders indicated that preparing staff to teach to the tougher assessment criteria for new SATs was more pressing. It remains to be seen whether this is a short-term fix to manage the introduction of the

new testing arrangements.

This is not the first time we have seen evidence of a narrowing curriculum in primary schools. As far back as 2001, we reported that the National Literacy and Numeracy Strategies, along with increasingly demanding performance targets, had adversely affected the breadth of the primary curriculum. Our subject reports on art and design and history similarly raised concerns.

Reduction of key stage 3

A more recent phenomenon in secondary schools is a curriculum shift in key stage 3, particularly since the removal of key stage 3 SATs. We have previously raised concerns about teaching and progress in our report Key stage 3: the wasted years?. Ten of the 23 secondary schools visited for this current survey were reducing key stage 3 to just a 2-year period of study. We also collected data from the websites of 171 schools to identify when pupils selected their options for GCSE. This showed that in around a quarter of these schools options were being chosen at the end of Year 8.

This inevitably means that a considerable number of pupils will be experiencing only 2 years of study before dropping, for example, history or geography or a language, possibly never to study these subjects again. And for most children, the end of key stage 3 is the last time they will take art, music, drama or design and technology. Where key stage 3 is curtailed, this means ending study at age 13 rather than 14. Furthermore, access to these subjects is sometimes restricted by how schools set options choices. In some of the schools we visited, and in further evidence from routine inspections this year, improving GCSE performance was offered as a rationale for this decision.

In a few of the schools visited, inspectors noted that their recent curriculum changes were informed more by the desire to cover the new GCSE content rather than an intention to benefit pupils by exposure to the richness of the 2014 national curriculum for key stage 3. The GCSE tests are designed to cover 2 years' worth of content. It is hard to see how taking longer than 2 years could expose pupils to more knowledge and not more test preparation. One exception may be the new mathematics GCSE. Here, there was an explicit policy intention to cover more ground than the previous qualification and therefore, for a transitional period, a longer period of study seems reasonable. More generally, there is scope for intelligent 'backward planning' to achieve a coherent curriculum sequence from age 11 to age 16, especially in subjects that are taken by all to age 16. But this should not come at the expense of key stage 3 curriculum breadth and depth: 11/12-year-olds should not be taught to GCSE assessment objectives.

We have not yet seen any analysis of the consequences of a shortened key stage 3 in terms of what pupils are learning. Are we all clear about what is being lost from that missing year and are we happy to lose it?

Improving the outcomes of lower-attaining pupils

Finally, I'd like to address the current debate about the curriculum for pupils with low prior attainment.

I would like to challenge a view voiced by many school leaders and particularly those leading schools with a high proportion of disadvantaged pupils. Leaders told us that they view the latest performance measures as a constraint. This is also indicated in recent research published by the DfE, where school leaders often identified that Progress 8 has removed the flexibility for them to cater for the needs and interests of all their pupils.

This debate relates to certain vocational qualifications being removed from the performance tables. Most leaders had previously considered these qualifications to be part of their curriculum offer for lower-attaining pupils. They suggested that it was becoming very difficult to offer 'good' alternative qualifications, like BTEC science, to this group of pupils because of the lack of parity it now has with GCSE qualifications. This means that it could have an impact on their Progress 8 score. Some leaders perceive this as narrowing the curriculum for lower-attaining pupils by forcing them onto a less appropriate academic track.

The evidence we have shows that these alternatives were not equivalent (see Ofsted's previous economics, business and enterprise report and ICT report). That aside, the focus here should be on what these pupils should be learning and what they need to do to progress. It should not focus solely on the qualification they are taking. This leads us back to school leaders mistaking 'badges and stickers' for learning and substance.

It should also not be taken as read that higher scores for the school always means a better deal for pupils. If a pupil gains valuable knowledge, for instance in history, but does not get a grade 4, they will still be better educated for having studied it.

What was equally absent when discussing low-attaining pupils was any reflection on how to achieve balance for them. Their access to the breadth and depth of the academic curriculum is limited by starting behind their peers. These pupils also typically have a shorter length of time before they leave school. In the schools we visited, improving English and mathematics was rightly a priority for lower-attaining pupils. This was particularly true in key stage 3, where intervention models were developed for low-attaining pupils that took their starting points into account. Yet, access to other national curriculum subjects, such as arts and some EBacc subjects like modern foreign languages, was often restricted. Indeed, in a few of the schools visited, lower-attaining pupils did not have any opportunity to study a language or some arts subjects, as the school directed them onto a pathway that excluded the subject as an option, in some cases from the age of 12.

It is a risk to social mobility if pupils miss out on opportunities to study subjects and gain knowledge that could be valuable in subsequent stages of education or in later life. Restricted subject choice for low-attaining

pupils disproportionately affects pupils from low income backgrounds.

The government has set a target of 90% of pupils studying the EBacc. This is the direction for all schools. I believe studying a full set of EBacc subjects is a desirable and achievable prospect for all but a small minority of pupils. This is true whether a child is going on to pursue an academic or vocational pathway. We need the same level of energy that is given to qualifications to be devoted to the relative merits of different ways of sequencing and organising subject content to take account of different starting points. Low-attaining pupils need basic skills, as all pupils do, but they shouldn't as a consequence be shut out of parts of the essential body of knowledge for any pupil.

Next steps

Phase one of this work has revealed the depth of the challenge. There is a serious risk of schools not fulfilling the promise and potential of the 2014 national curriculum or of academies not using their freedoms to achieve the same. School leaders need to recognise how easy it is to focus on the performance of the school and lose sight of the pupil. I acknowledge that inspection may well have helped to tip this balance in the past.

I have met many people who agree that the expertise in and focus on the curriculum has waned. On a more positive note, I have also met just as many people, or more, who have a vibrant enthusiasm for revitalising the debate about the curriculum. I know that many school leaders are aware of the concerns discussed here and are already working to revitalise curriculum thinking to ensure that the content of young people's learning takes precedence over performance tables. I particularly welcome the work of Association of School and College Leaders' commission on ethical leadership in this regard.

The substance of the curriculum is a matter for government policy. Ofsted has a role in judging how well schools reflect the government's intentions and don't distort the aims that have been set. This is complex and is why this is a long-term investigation for us. It is one that I have no doubt will shape how we inspect in future.

I would like to thank the leaders, staff and pupils of the schools visited for participating in these research visits. We will publish a full account of the findings once phase two is complete next year.