ASCL Association of School and College Leaders

Parents Teachers FOR EXCELLENCE

The Question of Knowledge

practicalities of a knowledge-based curriculum

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The **Association of School and College Leaders** (ASCL) speaks on behalf of members and acts on behalf of children and young people.

ASCL is Britain's leading professional body representing over 18,500 school, college and system leaders across the UK, including primary schools, multi-academy trusts and those working across phases.

Our members are responsible for the education of more than four million young people. ASCL works to shape national education policy, provide advice and support to members and deliver first class professional development across the sector.

Inspired by a vision of high quality education for all young people, ASCL aims to be the first choice professional body for all school, college and system leaders.

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Parents and Teachers for Excellence (PTE) is a new movement to promote reforms within the education system and to spread good practice to help deliver excellence in schools across the country.

Supported by some of the most respected people working in education, we believe in autonomy for schools, a knowledge-based curriculum, rigorous assessment, cultural enrichment and effective behaviour policies. These are already characteristics of some of the top performing schools in the country.

Our website is regularly updated with content designed to help teachers – and indeed parents – to ensure students receive the best education possible. Please visit **www.parentsandteachers.org.uk** for more information.

(Please note: The views and opinions expressed in articles throughout this publication are those of the authors alone and are not necessarily shared by ASCL and PTE.)

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Foreword – Leora Cruddas

This booklet arises from a series of lectures, publications and public panels in England over the last two years on the subject of the knowledge curriculum.

In September 2015, E D Hirsch gave Policy Exchange's second annual education lecture, held in association with Cambridge Assessment and the Inspiration Trust. Alongside the lecture, Policy Exchange published a short collection of essays, *Knowledge and the Curriculum*, drawing on a range of experts and thinkers on the subject.

The influence of E D Hirsch on educational thinking has been profound. At its heart is the idea that returning to a traditional, academic curriculum built on shared knowledge is the best way to achieve social justice in society. His work has also encouraged schools to focus on the concept of building cultural capital as a way to close the attainment gap.

Following the publication of the collection of essays, ASCL worked with Policy Exchange to host a public panel on 'powerful knowledge' with Professor Michael Young of the UCL Institute of Education (IOE). His influential book, *Bringing Knowledge Back In* (2007), posed fundamental questions about what it is in the 21st century that we want young people to know. The book draws on sociology of education and argues for the continuing relevance of the writings of Durkheim and Vygotsky and the unique importance of Basil Bernstein.

Bringing Knowledge Back In was followed by a co-authored book, *Knowledge and the Future School: curriculum and social justice* (2014) written with David Lambert and Carolyn Roberts. This book promotes the idea of 'powerful knowledge' for all pupils as a curriculum principle for any school, arguing that the question of knowledge is intimately linked to the issue of social justice – access to 'powerful knowledge' is a necessary way in which to engage in power structures more widely in society and to have any prospect of changing them.

Young's position is different from that of Hirsch in one important way. Young argues that concepts must be linked to the contents or facts that give them meaning and to the activities involved in acquiring them. It is this link between concepts, contents and activities that distinguishes the powerful knowledge curriculum model from Hirsch's list of 'what every child should know' (Young, 2014, p 68).

Young argues that this points to a new and always changing balance between the stability of subject concepts, changes in content as new knowledge is produced and the activities involved in learning. Therefore, he says, the powerful knowledge curriculum model is not a new curriculum waiting to be 'implemented' by schools. It is a way of thinking about the most important issue a curriculum leader ever faces – the question of knowledge (Young, 2014, p 68).

The collection of essays in this booklet offer some powerful reflections from school leaders on the question of knowledge. The booklet distinguishes political argument and appropriation of the topic from the fundamental question and principle of curriculum itself. It repositions the question of knowledge away from the political space, firmly in the professional space. What is it that curriculum design ought to do, and what knowledge and skills, in what sequence, can young people be expected to undertake?

In the preface to *Knowledge and the Future School*, Carolyn Roberts and Martin Roberts tell a story – written from the perspective of a school leader – of a young man waiting vaguely by your door:

"…His mum wants him to check his targets again, so you go over his last report for the third time. He seems satisfied with your explanation and conveys himself back to maths. When you asked him if he enjoyed maths he said he was doing better this term than last and is on target for a C, a relief to you both. But in your darker moments, you wonder what he actually knows, what will remain in his head of the next exam and what he will have made of his education once he moved on. Will he know enough to make a success of his life? What knowledge, you ponder, will help him to understand and make sense of the world? Does he know enough of science, poetry and human endeavour to encourage and sustain him? What have you actually done for him other than measure his 'attainment'?"

When PTE and ASCL decided together that we wanted to commission and publish this booklet, our aim was to give a voice to the many educators who have attempted to answer these questions in their schools. We hope it is a useful contribution, particularly for those school leaders who are looking to explore the question of knowledge and the practicalities of a knowledge-based curriculum.

Leora Cruddas
Former Director of Policy and Public Relations, ASCL

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Foreword – Rachel De Souza

"Divorced, beheaded, died, divorced, beheaded, survived."

For most of you, reading that short familiar phrase will have triggered dozens of thoughts, facts, and concepts. Without giving any other context, you are suddenly enmeshed in questions of absolute monarchs, international alliances, and the interplay between religion and power that ripple down from Tudor England all the way to the present day, exposed through Islamic fundamentalism, Brexit, and tabloid fascination with Will and Kate.

Knowing those things – and not just recalling the bald facts but deeply understanding them – gives you an upper hand. It gives you the confidence to discuss a wide range of live topics with those around you and it gives you social status. It makes you part of the club that runs the world, and the inside track to change it.

Parents and Teachers for Excellence was set up to pull down the barriers to joining that club, to help pupils from all backgrounds feel comfortable engaging with the complex world around them. We do this by promoting the benefits of a knowledge-rich curriculum within schools. Top performing heads from around the country – many of whom have contributed to this collection of essays – have come together to support us because they have seen the transformative effect that a knowledge-based education can have on a child.

It sounds surprising – obvious, even – to say you want schools to teach more knowledge. Of course, schools should teach knowledge: what else could they possibly teach? But underneath that bubbles a competitive, intellectual and occasionally fierce debate about knowledge versus skills. Shouting "Heretic!" across that divide benefits none of us. There is no need for dramatic excommunication here; rather a rebalancing of our approaches that accepts knowledge is the fount but that teachers need a full toolkit that spans the many facets of this challenging but rewarding vocation.

What we are setting out to do here is to set aside the theology and show what a knowledge-rich approach can look like in practice. Each school that implements a knowledge-rich curriculum will do so in their own way, and there is no divine ordinance for how a school must teach such a curriculum.

This collection is filled with real experience and insight from engaged, intelligent, and thoughtful practitioners across the country who have put these ideas into action, and every one brings their own tale of the roadblocks and rewards on such a journey. They have shared their experiences in the hope that others can take on their ideas and map out their own path.

We are grateful to Leora Cruddas for making this publication happen, and for helping fellow professionals engage in this vital dialogue.

We give thanks too, to all those that have contributed their words and convictions; sticking your head above the parapet, particularly in this time of 140-character barbs on social media, can too often lead to it being metaphorically lopped off!

Dame Rachel de Souza
Founder, Parents and Teachers for Excellence

Michaela Khatib

Executive Head, Cobham Free School

Cobham Free School

Cobham Free School (CFS) opened initially as a single form entry primary in September 2012, as part of wave 2 of the government's free school programme. Following a second successful bid, we gained approval to open a secondary school in wave 4 of the programme and merged this new provision with our existing primary to open an all-through school in September 2014. At present, we have a cohort of pupils from Reception to Year 10. However, the school will educate 1,008 pupils from age 4 to 18 years once it has expanded upwards and reached capacity.

The original vision for CFS was to bring best practice from the state and private sectors and this is being achieved through the adoption of a broadly traditional, subject-based curriculum, small class sizes of 24 and a focus on giving pupils from all backgrounds a rich cultural experience. We have close links with local centres of excellence, including the world-famous Yehudi Menuhin School for music tuition and Chelsea Football Club Foundation for sport.

Our pupils benefit from an extended day with an exciting and varied extra-curriculum programme. Student leadership and enterprise is encouraged, and there is a pastoral house system that operates across all phases.

Currently based in temporary accommodation across split-sites, we are hoping to move to our permanent premises in Cobham within the next few years and are working closely with the Education and Skills Funding Agency (EFA) to ensure the new building design reflects all aspects of our vision.

Knowledge and Skills

We believe that students need a knowledge-based curriculum to ensure they have solid foundations across a range of subject areas. We feel that a structured, well-planned curriculum, which offers appropriate progression and builds on prior learning, is the best way to prepare students for success in public examinations and equip them for their future careers.

The focus on imparting knowledge does not mean that we dismiss the value of pupils acquiring skills and, indeed, we feel that schools should offer a balance of approaches. However, we also recognise that pupils cannot be taught skills in a vacuum and benefit from expert, teacher-led instruction in order to acquire secure subject knowledge as a platform for their learning.

CFS has a motto of 'Optimum Omnibus', 'best for all', and aims to provide high-quality education to all children, including those from disadvantaged backgrounds. It is widely recognised that pupils from deprived sectors of society are less likely to have had a knowledge-rich start to life and may already begin school at a disadvantage; our knowledge-based approach is particularly valuable in helping to address this and close any gaps in attainment.

Recruitment and Engagement

A key aspect to implementing a successful knowledge-based curriculum is ensuring that the staff team has the capability to deliver and has a shared belief in the school's approach. Selecting high-quality teachers at the recruitment stage is vital, as excellent subject knowledge and the expertise to teach effective lessons in an engaging way is paramount to success.

In common with many schools nationally, we have found the recruitment of science and mathematics teachers a particular challenge and have had to be solution-focused in order to ensure quality teaching in these subjects. This has included developing our existing staff team by forming partnerships with university outreach departments or enrolling them on training programmes.

In-house sharing of best practice is a further strategy we use to promote the effective delivery of excellent knowledge-based lessons across the year groups. Senior department subject specialists work closely with their colleagues in the junior school on planning, assessment and moderation; they also assist with the continuous professional development (CPD) programme to pass on their subject expertise. This collaborative working is a critical part of our strategy to ensure there is carefully planned progression across the curriculum and thorough coverage of content.

All CFS teachers are expected to plan imaginative and engaging lessons with clear, targeted objectives that build on prior learning. We encourage teachers to undertake action research, trialling techniques such as 'precision teaching' combined with direct instruction, to increase learning fluency and improve recall of facts. Where appropriate, we have also researched and adopted a range of subject schemes as a framework for curriculum content. In order to extend further opportunities to acquire knowledge, beyond the curriculum offer, we have a wide range of academic clubs including philosophy, Greek and Mandarin.

Engaging parents in the learning process is a key part of our strategy for successful curriculum implementation, with the expectation that knowledge will be reinforced at home. Parents attend workshops to explain our methods and are issued with curriculum maps and topic packs to enable them to support their children. All homework tasks are carefully planned to consolidate the learning done in the school day.

Modern Foreign Languages

Our approach to Modern Foreign Language (MFL) teaching provides a useful example of how we have implemented the knowledge-based curriculum at CFS. We have selected traditional subjects for our curriculum (French and Spanish), rather than the increasingly popular community languages, as we believe in

exposing pupils to new knowledge, rather than practising skills acquired in the home.

In order to achieve our aims for excellence in language tuition, we have recruited native speakers onto the MFL staff team and pupils receive a highly structured and carefully planned programme with opportunities to extend learning and make the subject relevant for all age groups.

Children from the age of four have French lessons delivered by the subject specialist, and we have recently developed an MFL centre for our junior school to provide a dedicated space for language learning. In these younger year groups, songs and rhymes form a central part of the curriculum, helping to build up a basic vocabulary through the repetition of simple patterns.

In our senior department, learning in MFL lessons is sequential and there is a strong emphasis on teaching grammatical terminology. A 'scaffolded' approach is adopted by teachers to present new concepts in a structured way and build on prior student knowledge. For instance, selected verbs are taught in the 'present' tense until secure; the 'perfect' tense is then introduced to increase gradually the level of complexity.

When teaching vocabulary, a three-stage questioning approach is used to allow for repetition and help students memorise the language. Regular vocabulary tests are also planned into the curriculum to assess whether pupils have internalised words taught in a particular unit of study.

Although lessons are largely teacher-directed, a range of exciting strategies are adopted to motivate pupils and keep them engaged. These include cooperative learning techniques, such as Kagan structures, which have proved an effective method for pupils to practise their vocabulary and embed key knowledge.

Lessons in all year groups are carefully planned for progression and include clear objectives that are shared with the students. Pace is important and there is always an evaluation of whether the learning objective has been achieved, often involving student feedback. Planning is adapted to provide opportunities for further practise if the teacher identifies that pupils have not successfully grasped a concept, and regular assessment is used to identify any gaps in knowledge. Where appropriate, intervention measures are put in place to support pupils falling behind their peers.

We consider it essential for pupils to have the opportunity to use their language skills in a relevant context and a wide range of opportunities are built into the academic calendar in order to consolidate learning. French days, theatre workshops and trips to France are a regular feature of the CFS calendar and give pupils the chance to apply the knowledge they have acquired, to make their studies more meaningful.

Subject Mastery

As a relatively new school that is not yet at capacity, we are still developing our curriculum and continue to measure the impact of our approach on student outcomes. However, we have already noticed that the opportunity to acquire new knowledge is exciting and highly motivational for our pupils – and the scope for achieving mastery builds self-esteem. CFS pupils are actively engaged in the learning process throughout their time in school, showing a desire to develop their understanding and absorb new concepts. This level of focus has resulted in behaviour at CFS being excellent in lessons and has improved academic attainment.

Our curriculum strategy has been devised to maximise the potential of all pupils, regardless of innate ability or social background. The attention to delivery of subject content, coupled with thorough and regular assessment, has meant that individual gaps in learning have been identified swiftly. Pupils falling behind, including the most disadvantaged, have been given support through booster groups and intervention to help them catch-up to their peers. The inclusive nature of the curriculum means that even more children are able to achieve mastery across the subject areas.

In addition to the positive impact on performance in academic lessons, our focus on a knowledge-rich curriculum has allowed pupils to make connections and identify links with topics beyond the classroom. For instance, CFS pupils have been empowered to participate with confidence in our school debating society, drawing on their insight to present convincing arguments. Students are also entering and succeeding in tournaments against established state and private schools in challenges requiring swift recall of facts, such as the national French Spelling Bee and Latin speaking competitions.

Perhaps the most compelling evidence for the success of our strategy can be seen in the strong academic results being achieved in national tests. As an example, our robust, teacher-led approach to phonics teaching has meant the school has consistently achieved over 90% in the Year 1 screening check in recent years, obtaining 100% on two occasions. Results in Key Stage 1 and 2 SATS have been well above national average, with CFS being in the top 5% for progress in maths at Year 6 in 2016.

Although it will be a few more years until we have both GCSE and A level results, an exciting picture of future exam success is already emerging; evidence of rapid progress at Key Stage 3 suggests that students are set to achieve well beyond their projections based on prior performance.

Vision for the Future

The commencement of GCSE courses by the founder senior cohort this year has marked a significant milestone in our journey and we are now working hard to ensure success in our first set of public examinations in July 2019. We have given close consideration to

the GCSE option choices with the intention that the vast majority of our students will take the English Baccalaureate alongside a range of other academic and creative subjects.

We are also busy planning for the next stage in the project, the opening of our selective sixth form in September 2019. There is an expectation that all CFS pupils entering Year 12 will have acquired a strong knowledge-base to set them in good stead to meet the challenges of their chosen A level courses.

As the school expands, we will continue to focus on recruiting the best specialists to deliver the curriculum or look at continuous professional development to upskill any existing employees. We intend to trial "lesson study" sessions, (small teacher groups working collaboratively on curriculum content) to further develop our planning for progression. Our curriculum leaders will work closely with staff teams and undertake action research projects to evaluate the effectiveness of the knowledge-based approach and explore further strategies to improve pedagogy.

While we are committed to delivering an exciting, knowledge-rich curriculum regardless of any limitations of a temporary learning environment, the development of our new permanent site in the future is eagerly awaited by the CFS community.

The consideration of curriculum needs will be fundamental to construction design and we will collaborate with architects to create a solution to reflect he range of traditional subjects we will be offering.

Advice for Others

We would advise any school or trust looking to implement a knowledge-based curriculum to prioritise the recruitment of high-quality staff, with a strong track record in their subject.

From our experience, specialist practitioners can produce excellent results across all school phases; even the youngest pupils in the infant years can benefit from lessons with subject teachers (at CFS we have specialists for MFL, music and sports from reception upwards).

If schools have difficulty sourcing or funding specialists, leadership teams could consider introducing strategies such as using subject coordinators to teach across year groups in a primary setting; or at secondary level, linking with university outreach departments to provide additional expertise.

We would also encourage schools to examine ways technology can be used to enhance a knowledge-rich environment. At CFS, we have adopted an affordable cloud-based solution, which is infrastructure light and permits pupils to have their own device for research. The teacher-led nature of our lessons means that pupils are directed to the most appropriate websites for their learning, to eliminate time that might be wasted on browsing.

A further consideration is that schools do not need to dismiss completely skills-based approaches, as these can work effectively alongside a knowledge-based curriculum. Indeed, at CFS, we have embedded 'learner profile' skills into our planning. Teachers use a range of active-learning strategies in lessons, designed to promote the development of these 'profile' skills while also encouraging the retention of information to support the knowledge-based learning.

Finally, as a new school we have been able to roll out our expectations to staff from the outset. However, implementing new ideas in an established institution may be more challenging and we would suggest upskilling senior leaders in change management as a useful starting point for any school considering a cultural or curriculum policy shift.

Rebecca Handley-Kirk

Principal, Sir Isaac Newton Sixth Form

Sir Isaac Newton Sixth Form

Sir Isaac Newton Sixth Form is a maths and science specialist sixth form in the city centre of Norwich. At present, Sir Isaac Newton educates 420 sixth formers, which is expected to rise to 400 in September 2017. We are partnered with Jane Austen College, a new free school for students aged 11–19. Jane Austen College provides the opportunity for our students to study the arts, English and humanities. We are part of the Inspiration Trust, a multi-academy trust (MAT) in East Anglia committed to delivering academic excellence for all young people.

The vision at Sir Isaac Newton Sixth Form is to be a centre of excellence for maths and science and to develop the next generation of leaders within the STEM industries. We operate an extended day to allow students extra-curricular and super-curricular opportunities. Many of these activities are career based such as our medical society and engineering society, but students also have the opportunity to take part in a variety of sporting or musical activities. Students are also invited to attend lectures delivered by local professionals who have careers linked to maths and science.

We encourage our students to aim high with specific electives linked to Oxbridge, medicine, veterinary science and dentistry. Our pastoral system ensures students are supported when making decisions about their next steps; and all students attend a form time programme which prepares them for university or a higher apprenticeship.

Constant Knowledge Recall

Knowledge is key – this is true in all subject areas, but especially in the fields of maths and science. We want our students to challenge current scientific and mathematical theories and to go beyond what we already know; without knowledge of the current theories and the science behind them, this would not be possible. The fields of maths and science are rapidly changing and developing; we want our students to be able to adapt their knowledge to new-found evidence and to question new developments.

Sir Isaac students have an absolute thirst for knowledge and understand the requirement to continually reflect on and develop their knowledge. A level sciences are challenging and require students to think about difficult concepts and so having the prior knowledge available, students have more capacity for thinking through these difficult concepts.

All students arrive at Sir Isaac with differing levels of prior knowledge and a different attitude towards attaining knowledge. From day one of entering Sir Isaac, students are integrated into a culture of constant knowledge recall. They are taught about the importance of constantly testing themselves on the knowledge they have acquired and then stretching this knowledge through further reading and independent study. Closing the any gaps in knowledge from GCSEs is the main focus for teachers and students for the first term of A level study.

Teacher Development

As a maths and science school, we have to ensure the staff we recruit are of the highest quality. Staff must have the subject knowledge to stretch and challenge the most able sixth former. Nationally, science and mathematics teacher recruitment is a challenge and this is no different at Sir Isaac. We have implemented several strategies to combat this problem, including working closely with the local university to contribute to their maths and science teacher training programmes and welcoming trainee teachers, as well as delivering a Teacher Subject Specialist Training programme (TSST) to retrain teachers as mathematics and science specialists. Not only has this increased the number of science and mathematics teachers in the area but has also led to professional development for our teachers, who now lead on these programmes.

Teachers work collaboratively to develop resources and module packs containing all of the knowledge students are expected to know by the end of the course. The module packs then serve as an excellent resource for student revision. As part of the Inspiration Trust we are also able to share expertise with other schools within the Trust; staff come together regularly in subject specific network meetings to discuss the curricula and how to plan for a knowledge rich curriculum. The materials created, including the module packs, schemes of learning and resources, are then shared with all students and parents. This allows parents to track student progress and support with the reinforcing knowledge at home where possible.

It is vital to ensure that teachers are constantly developing their own knowledge and practice. We have therefore set up several different methods to support teachers with their development. Lesson study has been used this academic year; subject specialists work together to plan and resource a lesson, which is then observed and reviewed by the group. This process has led to teachers working more collaboratively, being self-reflective and having time to focus purely on the methods they are using to share knowledge with the students. Each department meeting also has a dedicated CPD slot where teachers share the best ways to disseminate the knowledge in the following week's lessons, which often leads to in-depth professional conversations about the upcoming material.

Consolidation and Study Skills

The changing of the A level course in science has meant that we were able to rethink the curriculum completely. We thought carefully about providing students with the time to really process knowledge and to embed this in their memory. As a result, we added a consolidation

lesson to every student's timetable in his or her science subjects, alongside four hours of taught content. The consolidation lesson provides an opportunity for students to recap the learning that has taken place in the previous weeks and gives them time to make links between topics.

The consolidation lesson is student led, the teacher acts as a support mechanism to guide the students and to answer any queries. The students use the lesson to test themselves, to memorise keywords and definitions and to focus on questions that they find most challenging.

At Sir Isaac Newton, we have a growth mindset culture that encourages students to make mistakes and view them as a learning opportunity. The introduction of the consolidation lesson was also an opportunity for students to go back over homework or exam papers and not only make corrections, but to actually think about why they got the questions wrong. Metacognition is therefore a large part of the consolidation lesson, with students dissecting the question and their thought process before attempting the question.

With A level subjects introducing a synoptic element to the final assessment, consolidation also allowed staff to bring in material from previous topics. Interleaving topic content has supported students with retaining knowledge and being able to access it when required.

In order for these processes to be successful, students follow an intensive study skills programme during their first four weeks at Sir Isaac Newton. During these sessions, students are taught the importance of interleaving and how to complete metacognition. Parents are also informed of these processes through the sharing of schemes of learning and study skills content.

To monitor the impact of the consolidation, a rigorous schedule of testing takes place. Students undertake a half-termly progress point which acts as a mock exam, including all content previously covered. In between progress points, students have fortnightly interim tests, which are short knowledge recall tests. These tests inform both the student and the teacher of the content which needs to be covered further during the consolidation lessons.

Teachers have found the consolidation lessons extremely useful as a way of monitoring that students are recapping their knowledge and regularly testing themselves. They have also taken the opportunity to use the consolidation lesson as a tool to ensure the knowledge they disseminate is embedded in student memory.

A New Level of Motivation

The impact has been most felt amongst the students, who now have an absolute desire for acquiring more knowledge. The culture change within the school has led to increased motivation amongst students; they now challenge each other and enjoy debating topic material. It is clear in lessons that the students aim to challenge the teacher's knowledge and extend the lesson content well into degree level maths and science. The teachers have also thoroughly relished this change and are planning lessons that are exceptionally challenging. They have introduced degree level material and textbooks into classes; they have encouraged students to question them on their knowledge of a topic; and they are delivering lectures to students who want to know more about a particular area of science or maths that is way beyond the curriculum. These developments have all been seen due to the implementation of the knowledge-based curriculum.

The introduction of the rigorous testing system has meant that intervention processes are immediate. Those students who do begin to fall behind are picked up rapidly and receive effective and timely interventions to bring them up to speed.

Our strong A level results show that the use of a knowledge-based curriculum has been a success. In 2015, our average point score (APS) per student was the highest in Norfolk and we continue to maintain these exceptional results, achieving above national average in all areas yearly.

As the new A level qualifications come online, we will continue to develop our curriculum, particularly in mathematics. The new 2017 A level qualification is providing the opportunity to re-think the maths curriculum, further embedding knowledge recall. We hope to see a positive impact on the outcomes in our A level maths as a result.

A School-Specific Curriculum

Our next steps will be to develop a Sir Isaac Newton specific curriculum, which is independent of the specification. We will, of course, cover the content required for the examination, but in a way that is purely focused on the knowledge students need to know to excel and reach the cutting edge in their field. Our curriculum already exceeds the specification and this next step would mean that links in topic areas can be seen more clearly and would also result in another level of knowledge interleaving, which would further support students with the memory of the content.

As the sixth form grows, it is vital that we continue to recruit highly specialised, subject experts. We will continue to deliver programmes such as TSST to increase the pool of possible candidates, which will support this aim. We also aim to create closer links with local professionals who are already at the cutting edge of their field, to not only inspire our students but also to teach our students about the minutiae of their field and the degree of knowledge required to really push the boundaries of science and maths.

The Inspiration Trust is recruiting subject specialist leads, who will be supporting with the development of the knowledge rich curriculum throughout the Trust. One of our next steps will be to work closely with the mathematics and science specialists to embed further

knowledge into our curriculum. And to utilise the expertise of these individuals to stretch the knowledge of our teachers, including regular personalised development for teachers on a subject level.

Advice for Others

From our experience at Sir Isaac Newton and within the Inspiration Trust, the key issue with implementing a knowledge-based curriculum is ensuring the subject knowledge of the teachers is of the highest order. Without expert staff, the knowledge-based curriculum would not be successful. The recruitment of exceptional maths and science teachers can be a challenge; however, by implementing strategies to attract these staff members, this can be overcome.

Once you have recruited expert staff, it is vital to ensure they fully understand what a knowledge-rich curriculum means. The teaching of skills has been commonplace in the education system for the last few decades. The change of focus from skills to knowledge can be a difficult transition for some teachers. A programme of CPD explaining what this means and how it looks in the classroom will ensure that teachers know the expectations and are able to effectively plan for knowledge delivery.

Finally, we have introduced a purely knowledge-based curriculum at Sir Isaac Newton, but we still value the skills students require to take their next steps into society. We want our students to be not only experts in their field; we want them to be able to articulate their ideas clearly, to be confident public speakers and to have strong leadership skills. These skills are practised in our extra-curricular and form time programmes. We ensure that the students are using their knowledge to practise a skill, for example presenting their knowledge of the Large Hadron Collider to an audience of 300 people after a trip to CERN. The skills students' practise are always closely linked to the knowledge they have acquired. As an establishment developing their knowledge rich curriculum, it is key to find this balance.

Stuart Lock

Headteacher, Cottenham Village College

Stuart Lock is now headteacher at Bedford Free School. However, this was written whilst he was still headteacher at Cottenham Village College.

Cottenham Village College

Cottenham Village College (CVC) is part of Cottenham Academy Trust, a small MAT of just two schools. Our sister school, The Centre School, shares a site with us. The school is located in Cottenham, a small village on the edge of the Fens, just North of Cambridge. We have three main partner primary schools but recruit from up to 35 others, with many children travelling by bus. The area is broadly a mix of families who have worked in traditional occupations such as farming, and also families where adults commute to Cambridge or London.

We were recognised as 'good' by Ofsted in November 2015, having had a turbulent time as a 'requires improvement' school prior to that. I became headteacher just prior to that Ofsted inspection.

CVC has just under 800 students on roll. In 2016, the school recorded its best ever results with 71% achieving 5A*-C including English and mathematics and a Progress 8 score of +0.4.

We work closely with other Cambridgeshire schools to share knowledge, specialisms, and resources. We also have informal links with a number of high-profile schools in London and across the country.

Assumed Knowledge

When citizens read the headline "NATO in Libya: Catch 22" the unseen and assumed knowledge behind that headline demands that readers know a lot about a lot, across a number of subjects. Indeed, as I write, the first headline turned up by googling 'news' is, "You're not Henry VIII, Corbyn tells May in Brexit row"[1]. That assumed knowledge – possessed by those who are members of the community of educated citizens – that has been passed down through generations in order to better understand the world, is knowledge that our pupils are entitled to.

On taking up the post of headteacher at CVC, I was explicit that I would bring a vision of knowledge-based education to CVC. Whilst no school save the most extreme will claim ***not*** to teach knowledge, I counterpose this vision of a knowledge-based education with that of both skills-based education – that decisions over content are unimportant in comparison to the development of transferable skills – and that of education for the sole purpose of getting a job.

Michael Oakeshott wrote that, "As civilized human beings, we are the inheritors, neither of an inquiry about ourselves and the world, nor of an accumulating body of information, but of a conversation, begun in the primeval forests and extended and made more articulate in the course of centuries. It is a conversation which goes on both in public and within each of ourselves."[2]

For pupils to participate in, extend or even undermine the conversation, they must be handed down the knowledge and traditions of the conversation. This is the essence of freedom. For example, you can place a pupil in a chemistry laboratory and tell them they are free, but they wouldn't know what to do with all that 'freedom'. However, if you induct them into the conversation that includes knowledge and traditions of chemistry handed down through the generations, they would be in a powerful position to make a difference as a human to that conversation. They may participate as free individuals.

To inherit that conversation, pupils need to know an awful lot of chemistry. The need for background knowledge also applies to studies of literature, mathematics, history, languages and even democracy itself.

At CVC, we phrase this inheritance of background knowledge in terms of entitlement because the entitlement to access, in Matthew Arnold's phrase, "the best that has been thought and said, "is an entitlement to participate in the conversation of mankind; the entitlement to the same knowledge and experiences that pupils who pay for their education take for granted.

We also value the contribution that research in the field of cognitive science brings to education. For example, as outlined in Daniel Willingham's *Why Don't Students Like School,* research has shown that a broad and significant knowledge base is an essential prerequisite for developing what is commonly known as skills. I would go further though, and suggest that the majority of what we call 'skills' are actually many pieces of knowledge called upon in different ways. For example, the 'skill' of inference is to decipher a message that is not explicitly stated in the text or speech, and is hence best developed through expanding vocabulary, wider knowledge of culture as well as common idioms and phrases. Cognitive science also suggests that these 'skills' are domain specific – for example being creative in one arena or discipline requires being extremely knowledgeable in that domain, but that creativity can't be easily transferred to another domain without significant knowledge in the new domain or subject.

At CVC, we want our pupils to create, infer, analyse, evaluate and synthesise; but in order for our pupils to be successful, they firstly need to know a lot. This is not just because we want them to take part in the conversation, but also because research shows us that having background knowledge helps us to be creative.

1 https://www.theguardian.com/politics/2016/dec/28/jeremy-corbyn-you-are-not-henry-viii-theresa-may-brexit-deal-commons-vote
2 Michael Oakeshott, Rationalism in Politics and Other Essays

How to Implement Such a Curriculum

The idea of curriculum being central to the decisions made in a school is in itself lost across much of education in the UK. Almost every senior leadership team in the country has a colleague, usually a deputy headteacher or equivalent, responsible for 'teaching and learning'. However, rarer is a deputy headteacher responsible for curriculum and where they are, this is often shorthand for 'qualifications'. A glance at 'school development plans' or 'school improvement plans' identifies similar priorities. Pedagogy generally trumps content. Or, to put it another way, how trumps what. Throughout my career, attempts to improve achievement of pupils has prioritised the how of teaching ahead of what is being taught. Even where 'curriculum' is on the school development plan and the primary responsibility of key colleagues in school, as I suggested this is often reduced to 'qualifications' or at most, the decisions on which subjects run and how much time is given to them.

Implementation at CVC therefore began with simply stating that the curriculum is a priority, and defining 'curriculum' as what is to be learnt. The full implications of this are that teachers are professionals and are hence responsible for debating and challenging what is learnt – and in what order it is learnt. To ensure that the curriculum is not limited to the narrow view handed down by the National Curriculum or by the specifications of GCSE qualifications, we start by asking our subject specialists:

- What are pupils entitled to know in your subject?
- Which sequence of knowledge best supports pupils' acquisition of that knowledge?

We have avoided extending our Key Stage 4 into Year 9, because we believe that even in subjects that pupils do not take for GCSE, there is knowledge they are entitled to, and that three years is the absolute minimum entitlement in these subjects.

The second question about sequencing, we frame around filling in the blanks of "We teach _____ in Year _____ so that pupils can access _____ in Year ____" We deliberately start with a focus on Key Stage 3 so that the starting point is not the exam specifications – after all, the specifications are a sample from the subject and limited in themselves. So reducing the subject to the exam specification threatens to really impoverish the curriculum

It is really important to listen to those who are experts in the subject, so we ensure that those who studied the subject to degree level have significant autonomy over the curriculum, with robust challenge. Being good at this challenge is in itself challenging. I have a secondary maths PGCE; how do I know how to ascertain if *The Picture of Dorian Gray* is the most appropriate text for Year 8 in literature? For this reason, we insist that each department are members of and engage with the subject-specific community outside of the school, and that we actively seek out other schools and trusts that have an explicit knowledge-based outlook (recently for example, we've learnt from various schools in Inspiration Trust, St Martin's in Leicestershire, West London Free School, Bedford Free School and Dixons Trinity in Bradford). Asking subject leaders to explain their decisions about sequencing of the curriculum alongside other subject specialists is a route to greater degrees of challenge to ensure an established curriculum.

Almost all continued professional development and learning (CPDL) time is focused on subject-specific considerations, so that even when this does reference pedagogy, it inevitably comes back to questions of curriculum. We have 12 "Teaching and Learning Community" sessions that eschew generic pedagogy in favour of subject-specific considerations – these can include professional reading, structured discussion on teacher instruction, consideration of subject-specific blogs or suggestions, or whole departments taking time to attend subject specific conferences such as that organised by LaSalle Education in mathematics.

We ensure that all of our colleagues access great CPDL and we take seriously our responsibility to develop teachers to be the best that they can. Our CPDL programme is subject-specific, regular, and focused on ensuring colleagues take advantage of the autonomy they are granted within the vision of the school.

The curriculum remains a key priority at CVC and the focus of our development. It is under review including at line management meetings that occur every two weeks. Explicit curriculum review meetings with senior leaders and the headteacher take as significant a place in the school calendar as 'standards review meetings' that follow GCSE results.

Knowledge and Art

I'd like to focus on an example – our emerging art curriculum in Year 7 and Year 8. Following an exposition of the need to move to a knowledge-based curriculum, the head of art asked me as headteacher what this meant for art and my response was that I honestly don't know. I do know, however, that a great many adults lack the cultural literacy to enjoy art galleries, or even to be able to identify the techniques and media used in well-known works of art. A great many more fail to recognise cultural reference points of some of the greatest works of art throughout history. I suggested that our art curriculum should probably ensure that we do everything possible so that our pupils have access to that which has been handed down through the ages.

Over several conversations, where the head of art, despite her values, came back to "what pupils have to do for the GCSE", partly due to the overhanging pressures of accountability, we agreed that the art department should come up with its own version of "what are the things that excite you, as artists and critics of art, that our pupils should experience by the end of Key Stage 3?"

Following this, our entire art department went to visit a school in London, where the curriculum had emerged from a vision of being knowledge-based,

and the school believes that there is a place within the curriculum for history of art. Over the two terms that followed, the art curriculum at CVC has been under constant revision. Where techniques have been taught, they are now taught within the historical context of the greatest or most notable artists or works of art. In Year 7, our pupils are expected to experience, grasp and understand the work of Andrea Mantegna, Andres Derain, Judy Watson Napangardi and Kathe Kollwitz, as well as better known artists Leonardo Da Vinci and Pablo Picasso. They also encounter Erich Heckel, and local botanical artist Evelyn Binns. They become familiar with Pointillism and Fauvism. They study the Grotesques of Notre Dame de Paris and more locally, the Gargoyles of Ely Cathedral.

Our pupils hence all produce:

- a Mandala individual segment
- a whole Mandala
- a pastiche of Picasso's *Weeping Woman*
- a graphite drawing influenced by Kathe Kollwitz
- a relief print in the style of Erich Heckel
- a botanical drawing inspired by Evelyn Binns and Leonardo da Vinci

In Year 8, pupils go on to be introduced to works by Giuseppe Arcimboldo, Tessa Traeger, Jason Mercier, Audrey Flack, Wayne Thiebaud, Sarah Graham and Henri Fantin-Latour – specifically the piece 'White Cup and Saucer (1864)' which is housed in the Fitzwilliam Museum, Cambridge.

They are explicitly introduced and taught these artists, movements and traditions – rather than 'discover' art that is within them. We explicitly teach them these artists and movements so that they are able to develop and be influenced by, and appreciative of, these artists and movements.

Our art department has spent significant time in the past collaborating with other schools and departments on the best way to teach different art techniques. However, they had never just been given permission to teach what is 'the very best' in art with the challenge of developing pupils who knew a lot about art.

The head of art said, "This has been liberating, and satisfying - I particularly took to heart 'what would you want your own child to know - and teach them that'" and, "I feel like I'm using my degree in a way that I never did before". Another art teacher said, "It has transformed my practice, because now I know I'm teaching so that the pupils learn properly rather than jump through hoops".

Have we got this right? Almost certainly not. I am sure that our art curriculum is not the best that it can be, but it is significantly richer and there is more content that allows our pupils to join the community of educated citizens. We will keep it under review and discuss and debate how we make it better given we are just one year in - I am unsure that it contains as much knowledge as it can, nor that our professional choices about what to teach are the best they can be – but we are in a stronger position to have those professional discussions about what our pupils are entitled to. And of course, this debate has been had in art, but it has also been had in every other subject area.

What has been the Effect?

There has been a notable reduction in the amount of 'tick-box' activity that goes on in lessons at CVC. This is not to say that teachers have ever engaged in nonsense, but that the focus on pedagogy and 'illustrating progress in 20 minutes' has meant that the focus on the curriculum as an entitlement was rather lost in the plethora of initiatives and priorities.

As a result of the focus on what is being taught, with less focus on the final examination or training for employment, our examination performance has improved. We have trusted knowledge to deliver the outcomes, rather than spending five years training pupils for examinations. Similarly, our focus on that which has endured – i.e. the best that has been thought and said – is leading to the approval of visiting sixth form colleagues. It is hard to know for sure, but we are starting to gain the impression that a greater proportion of our pupils will be ready for post-16 study and university.

Our most local primary school partner has noted our work and developed its own idea of a knowledge-based curriculum, with explicit knowledge that pupils will have mastered. We are sharing this with a view to what our pupils are entitled to from the age of 3-19 and the headteacher and deputy headteacher have been in significant discussions with us over how to develop this further.

It would be a mistake to suggest that CVC in the past had no part of this and that we started from scratch – this has been a reshaping of priorities allowing us to follow a vision. Similarly, a great many schools will have some or all of this in development. I do claim, however, that in making it a significant priority and allocating resources including significant time to development of the curriculum, we have a focus that has furthered the development in a way that we were not previously.

So Where Next?

I think there is a real danger that developing a knowledge-based curriculum might be seen as 'done' after a year or two. In reality, we are just over one year into a long-term job. There is no moving on to another initiative; we are playing the long game. This is what is important in schools, and hence is our continued focus for development over the next few years. Everything is subservient to curricular questions. So pedagogy, assessment, tracking and qualifications must lead on from us developing further our understanding of what makes a pupil knowledgeable, and ensuring we get as close to that understanding as possible.

Sometimes, a colleague will ask, "Who decides what makes a pupil knowledgeable?" The answer is that we do. That's our job, as professionals, to shape through discussion, argument and scholarship. We cannot afford to export that job to a handed-down national curriculum, GCSE specifications, or the established orthodoxy. And because of all of these things, it's a challenging journey, but it's also the one we must embark on repeatedly. The decisions can be controversial, but we must inculcate the background knowledge taken for granted by writers who address the intellectually engaged layman – as I've argued, it is these shared references that allow participation in argument, discussion and the ability to take an informed position in liberal democracies.

So we have now started to develop our assessment system so that it services our curriculum – assessment should be the process by which we establish what pupils know and what they don't know. That is it. Its purpose is that we can teach pupils the areas of the curriculum that they don't know. Ensuring that our assessment system does this without burdening teachers and pupils with spurious nonsense is essential. We will also develop our understanding of memory, for we want to ensure that, in teaching the best that has been thought and said, that our pupils remember it. How can we ensure that our pupils know a lot about a lot, not just tomorrow, or at the end of Key Stage 4, but when they are adults living with enriched imagination and freedom of thought?

After all, we are developing not merely the whole child, but the whole child's life.

Luke Sparkes and Jenny Thompson

Principal and Head of School, Dixons Trinity Academy

Dixons Trinity Academy

Dixons Trinity Academy opened with 112 Year 7 students on 4 September 2012; as a start-up, we had to do everything from scratch: each staff member, system and policy had to be recruited or written. Although procedurally protracted, this was a chance to craft a school culture with the highest standards – and the most complex element: total commitment to simplicity.

As such, at Trinity, our core values of hard work, trust and fairness permeate all that we do. And all that we do is appraised against them. We only recruit staff with a predisposition for our values (at times having to make the tough decision to turn away otherwise high-quality candidates) and from the moment a student arrives at Trinity, we ask them to live these values.

At Trinity, we have tried to take the best ideas from academies, schools, the independent sector and abroad. No individual element of our practice is revolutionary. We don't believe in 'off-the-shelf' strategies or practices; there is no silver bullet. It is really about being values-driven, having clear vision, focusing relentlessly on results, operating strict routines, doing the simple things well every day, and building strong relationships at all levels.

Although we have made a strong start, we fully acknowledge that we are a young school with a lot to learn and that our first full set of exam results is only an initial measure of our success; replicating success over time is evidence of a systematic approach that is sustainable.

Broken Windows

Core values underpin the school; core knowledge underpins students' learning. However, without a strong culture, irrespective of how successful it appears in design, a curriculum will be squandered. At Trinity, as Peter Drucker would suggest, we believe that culture eats strategy for breakfast. To be able to access our knowledge-based curriculum, our 'no excuses' approach instils strong learning habits, ultimately helping students become better qualified, more successful and happier.

We believe that the biggest advantage of starting a new school has been the opportunity to establish, and absolutely insist on, good learning habits with the highest of expectations and no excuses. We have very clear rules about homework and equipment because students have to be ready to learn. Our uniform is very practical and offers students elements of choice, but students are expected to wear it with pride and a strong attention to detail.

During lessons, students are expected to track the speaker, teacher or student, and remain focused at all times. If a teacher raises a hand, students fall silent whether in a classroom or a whole-school context. Our building was never designed to be a school – it is tall with narrow corridors, as such, students line up at the end of every break and walk in silence to every lesson. Some people could see how we "sweat the small stuff" as petty; however, those who have visited the school have recognised that our structures liberate teachers to teach and students to learn. We share everything with the children and our families; because everyone knows why we do things this way, they buy into Trinity.

Following Achievement First in the US, Trinity adopted sociologist James Q. Wilson's 'broken windows' theory that even the small details can have a significant effect on overall culture. We believe that students will rise to the level of expectations placed upon them. We have worked hard to establish a school culture that is both disciplined and joyful. Daily school-wide celebrations are opportunities to strengthen school culture, ensure consistency of message and reset expectations. Family dining is another example of this: students and staff share a meal; everyone has a role in helping; everyone has a place to sit.

We have no doubt that our achievement-oriented culture is the main driver of our success. Of course, no school is better than the quality of its teachers. However, there is only so much that even the best teacher can do with students who have low aspirations and poor learning habits. Conversely, create a truly aspirational school culture with knowledge at its core and all teachers can secure strong outcomes for every student. What we have learnt more than anything else from the best schools is the power of school culture, and that a strong school culture is not a means to an end, but an end in itself.

Meaningful Knowledge

The zeitgeist perception of a knowledge-based curriculum (rote-learning and the list-ification of education) is a misinterpretation. At Trinity, we understand that core knowledge (whether propositional or procedural[3]) is essential and practice is the unavoidable hard work required to generate automaticity[4]. Alongside this, we understand that, to be retained, knowledge must be made meaningful[5].

Part of generating this richness is achieved through 'stretch' projects that allow students to explore an area of interest within a given theme. All students present their stretch exhibition to their advisory group three times a year and the best from each advisory (as

3 D Didau, The Learning Spy, http://www.learningspy.co.uk/blogging/why-the-knowledgeskills-debate-is-worth-having.
4 D Kahneman, Thinking, Fast and Slow, Penguin Group, London, 2011.
5 D Willingham, Why Don't Students Like School?, Jossey-Bass, San Francisco, 2009, pp. 50-51.

assessed by their peers) presents to the whole year group and an invited audience. Stretch projects help to develop students' autonomy and grow their love of learning; they provide a place to explore propositional and procedural knowledge in new terrain – where exciting thinking can happen.

To help provide an environment for knowledge to develop into thinking, each week we provide dialectic lectures for our students to foster further cultural literacy. Each lecture is designed to provide sparks, to pique interest, to open a first door into the worlds that lie beyond – whether art history, ethics or philosophy. The lectures are an access point beyond which the students' autonomous learning habits and base of core knowledge allow them to explore.

To establish core knowledge, we know that memory is the most important process to harness. Memorising things in a useful and accessible way takes time. All the research shows that the key element that sets apart those with proven expertise in their specific field is not academic ability (whatever that truly means) but capacity for sustained work[6]. No shortcuts.

Financial Considerations

As such, like many independent schools, we have a longer teaching week. In addition to our 27 55-minute lessons, we run five half-hour morning meetings, five half-hour reading sessions, and four hours of electives in sport and the arts over the course of the week. A significant number of students are also expected to attend morning intervention from 7.30am and our Year 10 and Year 11 students have two additional hours of independent prep.

Much of this incurs additional cost. Staff do not teach any more than they would in another school because we believe they too need time to be maximally effective. There are four class-sets in each of the EBacc subjects in each year group throughout the week, but there are five teachers allocated: the additional teacher is flexibly deployed by the head of department to be highly responsive to the intervention needs of any student (or group of students) not on track.

Taking our cue from the Sutton Trust and the EEF, we save money by cutting out approaches that are not value for money. We do not employ classroom assistants, cover or lunchtime supervisors. Inspired by South East Asia and higher education, 20% of our weekly provision is in larger groups, including almost 10% of our teaching.

Mastery, Autonomy and Purpose

Our commitment to developing sustained capacity for hard work means that every day students are required to revisit prior learning in order to interrupt the forgetting of knowledge. This approach means that a culture of revision is at the heart of students' everyday practice. We teach core knowledge alongside teaching students how to revise from day one. The students' 100% Book is a key part of this process[7]. Revision can take place in lessons, in morning meetings, in prep and as homework. The 100% Book is, in essence, a revision guide or a core knowledge summary; each subject creates its own pages. The knowledge is cumulative and intelligently sequenced by the subject specialists to ensure that the GCSE trajectory of learning begins from Year 7.

As such, there are daily routines that are established to ensure students practise the processes that need to become automatic. For example, during morning meeting, every student completes daily low-stakes quizzes or a test on their core knowledge. The sequencing of this is critical, as memorising core knowledge needs to be folded into practising more advanced skills. Incrementally, this then needs to be fitted into spaces that provide new terrain in which the knowledge can be deployed as critical thinking.

This is where the interplay of great relationships and intelligent sequencing iterates the core value of trust. Our students know that some learning is a chore that takes time but that we would never waste their time; for students, feeling the 'light-bulb' moment has to happen periodically to maintain the will to memorise. This requires curriculum design that is both pragmatic and meta.

To deliver this, at Trinity, teachers can teach how they best see fit – they are the experts in their subject area. At a whole-school level, we methodically put in place habits and routines to support this. Sustaining culture is not an intellectually sophisticated endeavour; it is about being willing to do the mundane tasks every day, finding the energy to maintain expectations every day, and caring unconditionally.

At Trinity, this is echoed in our commitment to intrinsic motivation and our drivers of mastery, autonomy and purpose[8]. Mastery, the drive to get better and better at something that matters, ensures our students understand the value of effortful learning.

This approach led to our first set of public GCSE results this summer. 70% of students received a strong pass in English and mathematics combined (grade 5+; equivalent to a high C and low B on the old grading system); 48% of students received a strong pass in the EBacc; 15% of our students achieved at least one grade 9. Provisional data suggest we will be one of the top performing schools nationally for progress. 50% of our children come from the five poorest wards in Bradford, we are above national average in terms of SEND and disadvantage. We are not selective. There are no shortcuts.

6 D Willingham, Why Don't Students Like School?, Jossey-Bass, San Francisco, 2009, p. 106.
7 J Kirby, Pragmatic Education, https://pragmaticreform.wordpress.com/2015/03/28/knowledge-organisers.
8 D Pink, Drive: The Surprising Truth About What Motivates Us, Penguin Group, New York, 2009.

Sustaining Success

To sustain this, we need to be consistently reflective, always willing to ask questions about whether we have got the right knowledge on the page or whether our domain of knowledge is exactly right or if anything is missing.

For us, a knowledge-based curriculum is about harnessing the power of cognitive science, identifying each marginal gain and acting upon it; having the humility to keep refining schemes of work, long-term plans and generating better assessments.

Starting a brand-new school has taught us about the importance of keeping things simple. We established the school around a few concrete ideas that were not that radical and everything we have done since has built on those first principles. It is not the strategies that matter, but the way they fit together and the fact that everybody does them. We all share a common drive to make our school the best that it can be. We keep things simple, we do what we say we do, and, as a result, staff and students are happy, successful and determined to get even better, "In this Academy, only excellence will do". (Ofsted, 2014)

Hywel Jones

Headteacher, West London Free School

West London Free School

The West London Free School was one of the very first free schools, opening in Hammersmith in 2011, founded by a group of parents including the journalist Toby Young. The school serves an area of socio-economic and ethnic diversity. Our FSM cohort is 24%; we are truly comprehensive in terms of socio-economics, ability and ethnicity.

The school was set up to provide a classical liberal education to pupils in the local area. By a classical liberal education, we mean a rigorous and extensive knowledge-based education that draws its material and methods from the best and most important work in both the humanities and the sciences. The aim of such an education is not primarily to prepare pupils for a job or career. It is more to transform their minds so that they are able to make reasonable and informed judgements and engage fruitfully in conversation and debate – not just about contemporary issues, but also about the universal questions that have been troubling mankind throughout history.

We want children to leave our school with the confidence that comes from possessing a store of essential knowledge and the skills to use it. We believe that independence of mind, not compliance with socio-economic expectations, is the goal of a good education. We believe the main focus of our curriculum should be on that common body of knowledge that, until recently, all schools were expected to teach. This is the background knowledge taken for granted by writers who address the intellectually engaged layman – the shared frames of reference for public discourse in modern liberal democracies. Sometimes referred to as 'intellectual capital', at other times as 'cultural literacy', this storehouse of general knowledge will enable all our pupils to grow to their full stature. Passing on this knowledge, as well as the ability to use it wisely, is what we mean by a classical liberal education. Importantly, this is built on a firm foundation of impeccable discipline achieved through a centralised, daily, detention system.

Considerations

All pupils, irrespective of prior attainment and ability, should have access to the best that has been thought and said. As Michael Oakeshott put it, the purpose of a general education should be to induct pupils into the great conversations of mankind. That is why we are implementing a knowledge-based curriculum here.

However, that is not easy. The first consideration is to have a clear leadership vision of your aims and what outcomes you want, and then to be clear on how every subject contributes to this. We are explicit to all staff that we want all of our pupils to be inducted into the best that has been thought and said – to give access to all pupils to acquire the substantive and disciplinary knowledge of a modern foreign language, an ancient language, history, geography, religious studies, computing, classical civilisations, music and fine art – and make sure that this is their entitlement to the age of 16.

We expect all members of staff to demonstrate their passion for their subject at all times and to share their love of literature, music and art. We lead assemblies on renaissance science, Russian symphonic classical music, art movements in the 20th Century. Our purpose is to make sure that pupils can acquire a knowledge of these things and then be able to enter the conversation of mankind.

Divinity

Over the past two academic years, we have overhauled and significantly improved the religious education (Divinity) Key Stage 3 curriculum. Head of Department Robert Orme has created a bespoke curriculum, textbook, knowledge organisers and assessment tests. The curriculum is academically demanding and situates substantive knowledge of each religion within a historical and scripture context. This enables pupils of all abilities to develop a rich and replete knowledge of world faiths and secular challenges to religion. It has taken Robert and the department many months to develop the curriculum and associated materials, which has been helped by the school having a centralised detention system that ring fences spare time for staff to focus on curriculum development.

From the moment we interview prospective staff at the West London Free School, discussions take place on the importance of academic disciplines for all pupils and why this is central to the ethos of the school. The interview for Divinity is a good example of the knowledge-based questions we ask:

1. What scholarly book are you currently reading and why has it fascinated you?
2. What would you expect a pupil to know in religious studies by the end of Year 7?
3. When should we focus on biblical scripture and koranic scripture at Key Stage 3?
4. How important is it for pupils to study the rise of secular challenges to religion in the 19th and 20th Centuries, and when at Key Stage 3 would you include this?
5. How would you continue to develop your subject knowledge and how as a school can we assist in this?

The quality of teaching is a reflection of the quality of the curriculum, and that when staff talk about progress they mean increasing complexity within the curriculum for pupils.

A Wider Appreciation

In 2016, our first GCSE results put us ahead of most state schools with 77% obtaining five or more GCSEs grade

A* to C in English and Maths, 38% of GCSEs graded A*/A and 63% A*-B. Our Attainment 8 was 5.8 and our Progress 8 score was +0.14. Yet a knowledge-based curriculum isn't simply just about ensuring excellent examination results; it is also about generating a wider appreciation of the arts, music and sport. If students are to be familiar, for example, with history and culture in the Middle East, North Africa and Asia to be able to understand current political debates, where in the curriculum should they learn about Islamic civilisations? And what other ancient languages, beyond Latin and Greek, should we make them aware of so that they can see the multiple roots of changing ideas, language and culture? For those students who arrive with us with weak literacy, what modern and ancient languages – and what content in history, geography and science – will help to tackle the deficits in their reading?

These are open questions, and they are the most important ones for senior leaders – who want to create a knowledge-based school – to have a handle on. It is pointless to focus on improved academic outcomes without considering what we value about academic knowledge, what we mean by academic knowledge as opposed to everyday knowledge and, above all, the sequencing and interplay of knowledge within and across subjects. We employ three learning mentors who work with pupils to give them a wider appreciation of culture beyond the curriculum for example, by introducing them to Greek philosophy or contemporary cultural analysis. We try to enthuse pupils about culture beyond their everyday lives. Pupils also go on regular trips to the theatre and museums, to develop an appreciation of culture.

Moving Forward

We are looking to refine further our assessment of the Key Stage 3 curriculum. We want to create standardised, end of term, assessments with a slightly increased level of rigour for each subject that we can use year-on-year. This would then create meaningful quartile analysis based on raw marks and percentages of each year group every academic year.

We also want to create a much tighter and more fruitful interplay of substantive knowledge across each subject. To give one example, the impact of the Renaissance in both music and art, and within the broader historical narrative. Helping pupils to think across different subjects means they are: (a) freer to do more in-depth and wider work on the Renaissance; (b) quicker to assimilate textbook definitions; (c) more enthusiastic; and (d) more curious about the political and social dimensions that underpin the artistic and musical endeavours. This transforms what can happen in history (or the other way round, of course).

Such issues are fundamental. They are too important for occasional, accidental and unsystematic 'cross-curricular projects'. They are the very heart of what senior leaders should be interested in because they make a big difference to our social justice agenda of increasing the chances of ***all*** students having the knowledge. That means developing cultural reference points – securing chronological markers and specific, fascinating examples, especially those rooted in the arts – to make sense, in subsequent lessons, of demanding issues in history, such as political and social change, the complex mingling of religious and political ideas that saw democratic institutions stumble into life in Europe or the ideas of the Enlightenment.

Advice for Others

A knowledge-based curriculum can only be implemented if there is curriculum leadership. The Key Stage 3 curriculum should not be solely seen as a means to GCSE results, but should be viewed as fertile ground for the generation of substantive and disciplinary knowledge, which, as one of several corollaries, is the preparation for GCSE and further studies. Yet it takes a determined and brave leader to ignore the pressures to introduce a three-year Key Stage 4 curriculum or indeed a skewed curriculum plan that is designed solely to meet the needs of key performance indicators.

In other words, we need an end to the mistaken leadership view that qualifications and curriculum are synonymous and interchangeable. Therefore, my advice is be bold, be brave and create a knowledge-based curriculum that is authentic to the conventions and traditions of each subject and recruit and resource accordingly.

Mark Lehain

Principal, Bedford Free School

Mark Lehain is now Director of Parents and Teachers for Excellence. However, this was written whilst he was still headteacher at Bedford Free School.

Bedford Free School

Bedford Free School (BFS) was one of the very first free schools approved in England, and opened in September 2012. Set up by a group of local teachers and parents, we were the first brand-new secondary school in the town for many years, and we aimed to be distinctive in our offer to give local families greater choice in their children's education.

We are much smaller than average in size, with only 100 students per year, and we have a longer school day to allow time for every student to study subjects in greater depth and to experience our extensive enrichment programme. There are two sessions a week dedicated to clubs and electives – which cover everything from rowing, Italian and computer coding, to Bollywood dancing, knitting and Dungeons & Dragons. Inspired by other schools, we also teach all students to play a musical instrument – guitar, violin and (with support from the local Salvation Army) brass.

Having established ourselves as one of the most oversubscribed schools in the area, recently set up a multi-academy trust (MAT) which currently consists of two schools with approved plans for a third.

An Entitlement to Knowledge

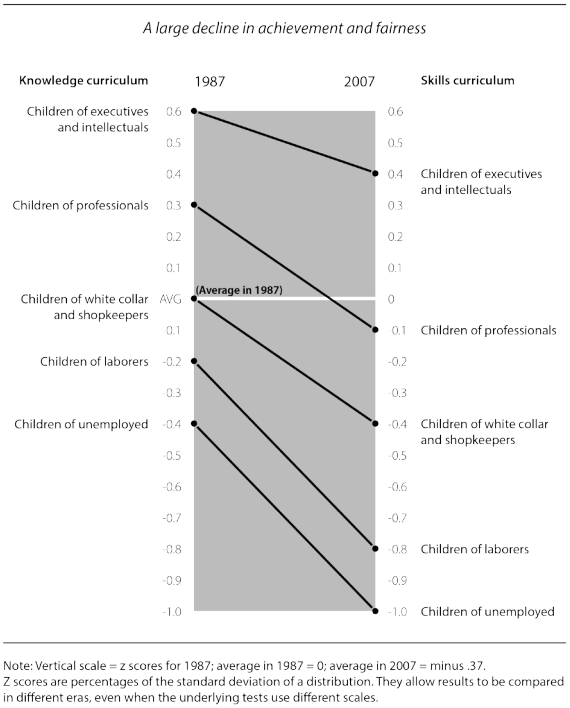
We support the idea of a knowledge curriculum as an entitlement for all students. We have become convinced that it is the best – and perhaps the only – way to ensure that all our students go into the world having been exposed to, and inspired by, the best that has been thought and said within our culture, so that they have a decent chance of leading a fulfilling and meaningful life.

It is about enabling children to grow up and experience joy and social justice. While we hope that it will improve academic outcomes too, we see this an outcome of getting the important things right – ie it is a symptom of interesting and interested, well-educated students – not our primary aim.

Where some staff in BFS unilaterally adopted a rigorous knowledge-approach in their subjects, we saw students' engagement and overall performance improve – and improve most markedly among students from deprived and chaotic backgrounds. It is this, reinforced by the work of E.D. Hirsch and others, which convinced us as a school that we needed to embrace the concept systematically and wholeheartedly.

Recently, when people ask me why a knowledge-rich curriculum is important, I show them this chart from Hirsch's latest book:

FIGURE 7.2 Curriculum effects in France 1987-2007 at the end of fifth grade



Note: Vertical scale = z scores for 1987; average in 1987 = 0; average in 2007 = minus .37.
Z scores are percentages of the standard deviation of a distribution. They allow results to be compared in different eras, even when the underlying tests use different scales.

Creating the Curriculum

Having become convinced that a knowledge-rich curriculum was essential if we were to achieve our ultimate aim, we realised that a thorough process was essential to design this properly. This is no mean feat, and we are currently about halfway through it.

Initial discussions led us to the following conclusions:

- We needed to create our own version of Hirsch's 'list' - to be clear as to what we wanted every student to know and be able to do, and not be constrained by existing curricula or exam specifications.
- Sequencing of the content of every area is key – both within and across subjects.
- The content should drive resourcing, assessment and pedagogy, not the other way around – so we have to review our approach to these as part of the process.
- We won't get it right first time – we don't need to have holy wars over things, as we plan to review termly and annually into the medium term.

None of these points are revelations; we're not doing anything unique, and these are things that are the basis of all good curricula in every school. However, the more we learned about what it was we needed to do, the bigger the job became. Each of these four points brought with them their own challenges, including:

- different views as to what should be the 'list', and when and how it should be covered
- differing and contrasting ways students should be assessed in each subject – and when they should be informally and formally assessed

- how one fits that within a school's calendar and keeps students and their families in the loop
- new resources and approaches need funding – and compete with the changing requirements and demands of the new GCSEs too.

What has been interesting is the sense of liberation we have all felt at the chance to view our curriculum from scratch once again. After all, we're only just in our fifth year of operation, and we had the chance to do this when we first opened. It could have felt a bit like 'here we go again', but instead it has given the whole place a new sense of 'oomph', and it has reinvigorated the discussion about why we do what we do.

History

History at BFS is both incredibly popular and massively successful – it's the most popular option subject, and has results in the top 10% in the country for GCSE.

The history team puts a large part of its success at GCSE and throughout the school down to its adoption of a knowledge approach several years ago – it was our pioneer team in this regard.

Our subject leader has always ensured that the team had a clear, well-resourced programme of study to deliver. However, there were elements of practice that we wouldn't touch now. Historical concepts and topics were well covered, but not necessarily in an order that made their chronological relationships obvious, or the links between them clear. Significant amounts of time were given over to lessons where historical content was present not as the centrepiece or purpose, but purely to enable activities devoted to developing 'skills' (I won't mention the popular model Tudor house making project either…).

They decided to make the change for a number of reasons. For me, it was the realisation that the most able students in our pioneer cohorts – 'really bright kids', with sharp brains, and who were on track to get brilliant GCSE grades – crumbled in conversation when we probed their understanding of the world beyond the exam specification. They were clever – but didn't know much!

Having decided to implement a knowledge-based history curriculum, the team carried out three major tasks:

1 They reconsidered exactly what they wanted all students to have studied by the time they reached the end of Year 9.

2 They carefully sequenced when and how this content would be delivered – so that students could see how other earlier events linked into later ones.

3 In terms of planning, and resource and assessment creation, they treat the entire curriculum as a single project – so that an overarching view of a student's knowledge was maintained.

There were major challenges to this approach. It was extremely heavy in terms of staff time and the creation or sourcing of quality, knowledge-rich resources has proved to be hard work (the poor quality of most published textbooks in the UK is an ongoing disgrace to our profession).

Having done the above, it became apparent that a couple of other major changes were needed. Firstly, there simply wasn't enough curriculum time given to History in Key Stage 3. Having decided what it was students needed to know, we weren't giving them the time needed to learn it. As a head, this was a tough decision to make – time allocation is a zero-sum game, and it impacts on staffing. But the exercise we'd been through was robust, and the case for change strong, so I had no choice but to find the extra hour a week.

The second big change a knowledge-rich history curriculum led to was the pedagogical approaches the team took. Knowledge doesn't lend itself so easily to fads or gimmicky modes of delivery or student activities. In history, you'll now see fewer card sorts and more low-stakes or multiple-choice quizzes, more teacher talk and less cutting and sticking. We've had to do a lot of staff training to get the approach right, and to reassure people that it was ok to be the 'sage on the stage' more.

History was the test bed for a knowledge curriculum at BFS, and the lessons we learned here have formed the basis of what we are doing across the school right now.

Immediate Changes

As I have stated above, we are still in the process of fully implementing a properly sequenced knowledge-rich curriculum across the whole school. However, where things are more advanced we are already seeing some significant impacts on staff and students.

For me, the two most immediate changes seen are the greater ownership that students take for their learning, and the reduction in staff workload.

It might seem like a statement of the obvious, but being really clear about what students need to know and how it is organised has made it much easier for them to self-study. They are becoming better at making sensible connections between topics and subjects, and retaining what they cover more systematically. Of course, good organisation is important for any kind of curriculum, and one doesn't need a knowledge curriculum to be organised to this extent.

I would argue though that the very process of defining and organising desired knowledge at a curriculum level enables a school to present learning in a way that is easier for everyone to understand – and that this empowers children and their families to take more control of the process, to everyone's benefit.

In terms of staff workload, the benefits were really brought home to me when I was chatting with one of our NQTs last year. They explained to me that the other NQTs they shared a house with were jealous of how little work they needed to do at home in the evenings and weekends.

I asked why this was possible, given that they and their classes were performing really well, and they replied, "because it's all clearly defined for teacher and students – what kids need to learn, when and how they'll do this, and how we'll check along the way what they've retained. My job is just to bring it to life in ways they can remember."

At a time when recruitment and retention of staff is a huge issue and workload is a big reason for this, anything we can do to improve our teachers' lives is vital.

What Does the Future Hold?

For BFS, it is simple: we have now finished reviewing our curriculum, and we will have begun final implementation by the time you read this. Ensuring that goes well is the next step.

A particularly exciting new challenge for us is looking at how we implement a knowledge-rich curriculum in a primary school that recently formed a MAT with us. For us, this is the Holy Grail in English schools right now. If we can systematically and thoroughly build a solid foundation of cultural literacy in students in Key Stage 2, then we will be able to take them so much further on at secondary.

Perhaps just as important for me, it should improve teachers' work-life balance. A clearly defined and properly resourced subject-based primary curriculum should cut hours of planning and marking every week, and make the job much more manageable.

Advice for Others

The most important piece of advice? Don't play at it. A school's curriculum tells the world what it wants for its students, and how serious it is about achieving that. Most importantly, it sends a message to its students as to what it hopes they will do with their lives.

A curriculum that doesn't stretch students, that doesn't make them smart and enlightened individuals and citizens, prepares them for stunted lives. It tells them that their place in the world is to do as they are told and follow orders, not challenge things to be better.

What a school believes to be the best that is thought and said becomes its DNA. It drives everything it does: how pastoral systems are designed, what people it employs, and how resources are deployed.

Adopting a knowledge-rich curriculum is more than just new textbooks or schemes of work. Don't be afraid to take time to define what exactly it is you want your students to know and be able to do. Challenge obvious statements or content. Consider whether subject A's proposals support or contradict those of others, and whether this matters or not. And don't get hung up on it all having to be perfect the first time around.

The second most important piece of advice? Don't reinvent the wheel when it comes to resourcing your new curriculum. There are other schools out there going through the same process. Some will likely come up with similar things to your school – and might already have resources, assessments and the like that they'll share with you.

It frontloads the effort, but if you get the curriculum, pedagogy and resources side of things right, you will be able to significantly reduce the workload of your staff. No more trawling the internet at night for worksheets, or last-minute cobbling together of unit assessments. Clearly organised knowledge means more straightforward assessment and monitoring. Absence – staff or student – becomes easier to manage too.

Quite simply, a carefully considered curriculum will improve both your student and your staff's lives.

Carolyn Roberts

Headteacher, Thomas Tallis School

Thomas Tallis School

Thomas Tallis is a very large 11-18 mixed inner London community comprehensive school between Blackheath and Kidbrooke in the Royal Borough of Greenwich, South East London. We have a big sixth form of about 500 students, and excellent A level and BTEC 3 outcomes. Our young people are from the widest range of socio-economic and heritage backgrounds, with about 17% on FSM. We have two special provisions, one for deaf children, and one for children with speech, communication and language impairments.

Tallis is very popular and oversubscribed, with a distinguished history in arts education and embedding creativity in all of our disciplines. We have a strong online presence and links with many other schools and institutions, locally and further afield. We are the only school, for example, involved in the prestigious Tate Exchange programme at the Tate Modern, a collaborative enterprise exploring new ways of thinking about art and its value to society.

I joined Tallis in September 2013, my third headship.

The Purpose of Education

My commitment to knowledge is rooted in my belief about the purpose of education.

In the teeth of structural change, we retain our role as society's educators and guardians of the young. Teachers' Standards codify our professionalism but what of our purpose? We are the people who offer powerful and shared knowledge to the nation's children. That knowledge comes from centuries of learning and from the universities and subject associations. It is powerful because it enables children to interpret and control the world: it is shared because all our children should be exposed to it. It is fair and just that this should be so. It is unfair and unjust when children are offered poor quality knowledge that fails to lift them out of their experience.

These are the ten principles upon which I work:

1 **Knowledge is worthwhile in itself.** Tell children this unapologetically: it's what childhood and adolescence is for.

2 **Schools teach shared and powerful knowledge on behalf of society.** We teach what they need to make sense of and improve the world.

3 **Shared and powerful knowledge is verified through learned communities.** We are model learners, in touch with research and subject associations.

4 **Children need powerful knowledge to understand and interpret the world.** Without it, they remain dependent upon those who have it or misuse it.

5 **Powerful knowledge is cognitively superior to that needed for daily life.** It transcends and liberates children from their daily experience.

6 **Shared and powerful knowledge enables children to grow into useful citizens.** As adults, they can understand, cooperate and shape the world together.

7 **Shared knowledge is a foundation for a just and sustainable democracy.** Citizens educated together share an understanding of the common good.

8 **It is fair and just that all children should have access to this knowledge.** Powerful knowledge opens doors: it must be available to all children.

9 **Accepted adult authority is required for shared knowledge transmission.** The teacher's authority to transmit knowledge is given and valued by society.

10 **Pedagogy links adult authority, powerful knowledge and its transmission.** Quality professionals enable children to make a relationship with ideas to change the world.

This is what we're about. Results follow doing this right.

Subject Teams

Therefore, in 2014-15, we devoted all of our training time to subject teams, starting a two-year programme where every department updates their programme of study from first principles. Teachers had to start by deciding what they believed a well-informed person needed to know in the subject area, and then planned the five-or-seven-year programme accordingly. Although it is very tempting just to start with the A level specification and work backwards to Year 7, we challenged our teams to step beyond it and work out for themselves what was important for children to know, rather than just what is be examined.

This is the more challenging, as most teachers under the age of 50 – with the exception of RE specialists – have never had to think a curriculum into existence. The task needs to be clearly explained, both theoretically and practically, from the start, with deadlines and templates to help people focus their thoughts. We are a school in an authority without a stable of subject inspectors and we are not part of a MAT where the curriculum is developed centrally. Each of my heads of department has to have the capacity to know, understand and choose the curriculum for the good of the children. Quality recruitment, therefore, is key.

Maths and Science

Our biggest issues were and have been maths and science. After recruitment difficulties, I altered the leadership of science in 2015 and the new post-holder, a very experienced person, was ready to make the change to subject post-holders and partial subject-specific teaching from Year 7 upwards. They have based their

curriculum on a combination of basic principles and processes enhanced by CASE-type experiences and a hugely increased practical focus.

Maths has been more challenging, not because the maths team is weaker but because the damage done by short-term test-training in maths is much more damaging. My arrival at the school in September 2013 coincided with Michael Gove's insistence that early and frequent entry should be discontinued, though I would have made this change myself notwithstanding. Consequently, our 5A*-CEM results dropped by 15% over two years, because of lower results in maths.

We have focused on rebuilding the knowledge base of children from Year 7 upwards, based on a combination of mastery and our own choices. In this, we have worked with the Halifax project, and collaborated with other local schools. There is still some way to go: 2017's Year 11 were still trained for test-passing for most of their learning and did not have the sound base for knowledge that we'd like. We are very optimistic with Years 7-10, and *quite* pleased with the new Year 11! Further, we have increased curriculum time for maths and English to help embed deeper knowledge. Balancing this correctly with our commitment to a full, broad and balanced curriculum is another challenge.

Our biggest challenge, of course, is staffing. While we are very fortunate in that we have nearly a full set of specialist teachers in both maths and science, we are struggling a little. We lost four teachers (from 16) in maths in August, all for planned and unavoidable personal relocation reasons. It has been hard to replace them and we're currently running with two temporary staff in maths. Our progress and our daily lives would be very much improved by a sensible supply of quality maths and science teachers.

Tallis Principles and Habits

I took on a school which had had some years of leadership turbulence and where the experienced staff were rightly annoyed by the de-professionalising of teachers by a Department for Education addicted to whim, diktat and short-termism. Re-stating our principles for the whole school in all areas of our life has been a way of rebuilding our confidence and, we believe, improving the education of our young people.

We support our commitment to knowledge with our Tallis Habits, a school-wide focus on persistence, imagination, discipline, collaboration and imagination; and Tallis character traits of respect, optimism, kindness, fairness and honesty. We use Rob Coe's summary of what happens in the classroom: "children learn when they have to think hard". The impact of our work has been that children expect to know a lot of stuff and be able to use it in their lives. How this will translate into results over the next few years is hard to predict, given the unremitting turbulence of the calibrations.

The Long-Term View

We needed stability and quality to fulfil our school aim of "education to understand the world and change it for the better". The commitment to knowledge is a basic requirement in order justly to educate all of our young people. It is not a bolt-on and can't be done quickly. It requires an education service that values and rewards teachers for a combination of expertise: subject, teaching skills and a deep understanding of both child development and pedagogy. We are some distance from achieving this, as a country, so schools have to devise their own training programmes. So, for us, we continue to try to reinforce our teacher recruitment and internal training programmes so that the quality graduates who come to us can develop young people of all abilities.

(On that matter, in practical terms, finding the right courses for the very weakest students which are still rooted in good subject knowledge is still too challenging, and I worry about the impact of the raised standard of grade 1-2 compared with the G-F grades of the past for those vulnerable young people.)

Advice for Others

Basil Bernstein described learning as being the hard work of making a relationship with ideas. However, it is in the relationship between teachers and pupils that knowledge is developed, through academic disciplines. Those disciplines themselves serve as public forms of understanding in which society has conversations about itself and its future. As our own old National Curriculum used to say, we teach what is needed for a just and sustainable democracy, or as Hirsch says, "national wellbeing" is at stake.

Work out collaboratively why it matters and commit yourselves as a school to do it. Try not to be distracted by off-the-peg solutions. Think really hard as you try to change the world!

Libby Nicholas

CEO, Astrea Academy Trust

Astrea

Astrea Academy Trust is a MAT that was set up as part of the DfE Northern Education Fund initiative. The Trust runs primary, secondary and post-16 provision with a specific focus on an all-through education that inspires beyond measure. We have the capacity at all phases to deliver educational excellence and ensure strong governance and oversight.

Astrea was set up with the explicit aim of contributing to educational excellence in the North and to ensure social equity through an outstanding holistic education. Having established our family in the north, we are now in the process of putting down roots in a second region, in Cambridgeshire. There are now 18 academies in our family, and in each and every one, we aim to deliver an education that inspires our pupils beyond measure, so that they go on to be very best possible version of themselves.

We passionately believe that every child is entitled to the opportunities for learning and enrichment that Astrea can provide, centred on a Core Knowledge curriculum.

Cultural Literacy

The single most important function of a successful school is to teach a curriculum that is very rich in subject knowledge, furnishing their pupils with a deep repository of factual knowledge that they can access at any point; dipping into and making connections and links throughout a lifetime of learning. Knowledge begets knowledge: the very act of acquiring knowledge helps young people to remember new information, solve problems and improve their critical thinking.

This baseline of facts, once assimilated and genuinely understood, brings forth a level of cultural literacy that then allows pupils to play a fully engaged role in society. And whilst it is certainly true that children benefit from knowing how to look up information, improving their reading ability and their general understanding of a subject – and indeed the world around them – depends on the depth of their knowledge of different subjects.

For us, this is all the more important as we work in some of the most socio-economically deprived communities in the country. And the truth of the matter is that some of our children come to school with less knowledge – sometimes considerably and heart-wrenchingly less. A knowledge-rich curriculum helps compensate for what some of their more affluent peers will take for granted. Knowledge is crucial.

Knowledge and the All-Through Approach

Our approach in as Astrea is to provide a continuum of excellent education through primary and secondary academies. Perhaps the most exciting prospect for us is setting up a new all-through school in Sheffield: the Astrea Academy.

The new 2 – 18 academy in Sheffield will open in September 2018, and its curriculum exemplifies our approach to developing a Core Knowledge curriculum. Fundamentally, the all-through approach allows for a holistic, linear design of a curriculum that protects children from the 'cliff edges' of end of phases – specifically, the "wasted years" of Key Stage 3 and the major drop which can happen in transition from Year 6 to Year 7.

Developing the curriculum model for the new academy has been an extremely rewarding process for the Astrea team. Our starting point was to define the qualities the academy seeks to develop in its pupils so they are equipped to meet the challenges of a rapidly changing world with confidence and success. These include:

> **Resilience.** Strength through determination and quick recovery from difficulties.
>
> **Empathy.** A stable and comforting learning environment through shared feelings.
>
> **Aspiration.** Aiming for the top and seeing others achieve brings out the best in everyone.
>
> **Contribution.** Each playing a part in producing positive results.
>
> **Happiness.** Satisfaction and contentment lead to a better learning experience.

Like all of our academies, the all through academy will have a curriculum that is values-led, which engages, motivates, and inspires pupils and which gives them the opportunity to translate learning into real and relevant skills application. The Astrea curriculum prepares pupils for life and work and enables them to achieve their potential both academically and creatively.

In terms of challenges, there is an inherent tension between balancing enrichment with the high stakes demand of a broader and deeper curriculum at GCSE. This has to be managed sensitively, given the huge contribution of areas of the curriculum such as the arts, drama, public debating and so on that make in providing deeper and broader cultural literacy.

The Impact of a Knowledge-Based Curriculum

We will be implementing the knowledge-based curriculum in the 2 – 18 academy in Sheffield in 2018, but looking further ahead, we fully expect the impact of this to be that children from socially challenged backgrounds are given the means to access a culturally rich heritage. The canon of knowledge that our curriculum will provide will allow them to make connections between subjects, moving away from the atomisation of subjects: this is no longer about maths being taught in a maths classroom by a maths teacher. It's about revealing the links – showing how history is deeply embedded in philosophy, and how English Literature is more readily understood with the historical, political and economic context for example.

It means that young people will feel they have a right to be involved in the conversation; a right to pick up a newspaper, digest its contents, and make connections; a right to be part of the public debate.

Longer term, this impact should be measured not just in how young people perform at key points of assessment, or indeed what degree they achieve at university. It's about what they go on and do with their lives and whether they genuinely fulfil their potential.

A Beacon of Knowledge

Our next step is to establish the Astrea Academy Sheffield as a beacon school for outstanding curriculum. Over time, we hope that this school will become a teaching school to support the wider family of Astrea Academies, as well as other local schools.

Fundamentally, Astrea is a values-led organisation that is committed to the co-creation of curriculum with our school leaders. With the Astrea Academy Sheffield established, we will continue our discussions with our executive principals and principals about how to embed enrichment to ensure that they are not reliant on the good will of one or two teachers, but deeply knitted into the fabric of what it means to be part of Astrea.

Advice for Others

Debates around curriculum models – knowledge vs. skills – can become very heated and driven by emotion. The most important thing is to be clear about what you are doing and why. For us, those decisions have always been evidence-led and we develop our pedagogy from there. This means a curriculum that equips pupils for the rest of their lives, not simply to pass the next test or exam that they are facing.

Once the leadership team is clear on the reasons why you are implementing a knowledge-based curriculum, you will have to sell that vision to your wider team. At Astrea, we take staff CPD very seriously and invest heavily in the development of everyone who works in the family. As well as bespoke training, that also means that we get our principals and their senior teams together on a regular basis, and these sessions are invaluable when it comes to sharing the vision, demonstrating the evidence base and then exploring the practicalities of how to implement.

It's perhaps important to stress that in at Astrea, we do not believe in taking a didactic approach. We base our pedagogy and our approach on evidence-based research and what demonstrably works. We want to encourage all Astrea colleagues themselves to be learners, and to develop their own understanding of that evidence base and then apply it in their local context.

Forcing colleagues to adopt one model over another is a recipe for failure. Our approach is to set out the evidence, demonstrate how it works and the impact, and then to trust in our colleagues' professionalism to apply that learning in their own context.

Oliver Knight

Headteacher, Greenwich Free School

Greenwich Free School

At Greenwich Free School (GFS), our core belief is that all pupils can succeed if given outstanding teaching and pastoral care. Our mission is to create a school of the highest standards that achieves this through recruiting and training excellent teachers and support staff and in developing a pastoral system that ensures no child is left behind.

Whilst we want all of our students to leave GFS with the currency they need to access the next stage of their education and have an unrelenting focus on hard work, we know that getting great exam results is only half of a good education and we are determined to deliver as many opportunities as we can for every child to flourish outside the classroom.

To that end, we run 12 Drop Down Days a year – a day entirely off curriculum where the students can explore a subject in depth – but focusing on mastery and extension of a subject beyond the curriculum rather than a whole day of project based learning. We also run the Duke of Edinburgh programme for Year 9 and Year 10 pupils; organise a 3 Peaks Challenge in June each year; have a pupil-led school newspaper; have a pupil-led RAG (raising and giving) Committee; run highly-structured Peer Mentoring and peer reading programmes; introduce pupils each year to the joys (and pain) of BMXing – I don't believe you can teach resilience sitting down; deliver a two-hour enrichment programme every Wednesday afternoon; put on at least one school play each year; have an orchestra, a choir, several ensembles and performance groups and, a forest school.

We organise and deliver all of these experiences as we believe they will help equip all of our pupils with the experiences and habits they need to live a happy and successful life.

Priorities and Promises

The words of Michael Young perhaps best outline why we believe in the importance of a disciplinary curriculum at GFS.

"I want to make an argument for a view of school leadership and a new way of thinking about leadership. It places the curriculum – the principles on which we decide what a school should teach – as shaping all the other responsibilities that face a Headteacher... It is a school's curriculum priorities that convey to staff and students and to parents, (and ultimately, government) what a school's purposes are - what it can (and cannot) do. Schools are not social work agencies nor can they solve the problems of youth unemployment. So what can schools do that no other institutions in our society can do?"

Schools can teach, and develop understanding, of academic subjects to as wide a group as possible. This is the democratic promise of state education. Therefore, at GFS we believe that all learners should encounter and wrestle with ways of constructing knowledge and ways of thinking that are above their everyday experiences, and see that academic concepts are different from everyday concepts and ways of explaining the world.

"To instruct someone... is not a matter of getting him to commit results to mind. Rather, it is to teach him to participate in the process that makes possible the establishment of knowledge. We teach a subject not to produce little living libraries on that subject, but rather to get a student to think mathematically for himself, to consider matters as an historian does, to take part in the process of knowledge-getting. Knowing is a process not a product."[9]

The Poverty of the Generic 'Thinking-Skills' Approach

Expert teaching isn't just about pedagogy – the strategies and techniques that the teacher uses. It is about what is being taught – the curriculum the school and department has chosen to follow – and the teacher's knowledge of that subject and its structures. Over the past decade or so, we have witnessed the moves away from academic subjects towards genericism and competence-based frameworks in schools. This has proceeded hand in hand with the mistaken view that teaching academic subjects is merely about providing information, rather than about developing forms of disciplinary thinking. It's fashionable now to ask, 'if we have Google why do we need subjects? Pupils just need the skills to find the information.'

Put another way, in the words of Counsell:

"The view that disciplines can neither engage nor serve most pupils often betrays two misapprehensions: first, an assumption that a subject equates to information, as opposed to knowledge; second, a lack of awareness that a school subject such as history has long involved the active and engaging exploration of the structure and form of that knowledge, using concepts and attendant processes."[10]

The 'thinking-skills' argument ignores the distinctive purposes of academic disciplines. Disciplines are not sets of 'skills' so much as distinctive ways of building knowledge, weighing evidence and finding truth. In schools like GFS, subject specialists use their own disciplines to teach students how to think in particular, powerful ways. In other words, the particular disciplinary

9 Bruner, J. Toward a theory of instruction. Cambridge Mass: Harvard University Press. 1966
10 Christine Counsell (2011): 'Disciplinary knowledge for all, the secondary history curriculum and history teachers' achievement', Curriculum Journal, 22:2, 201-225

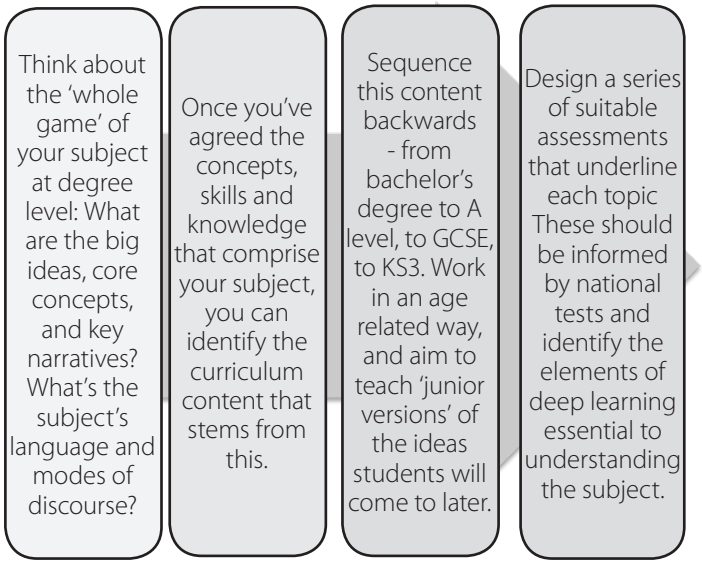
context of a subject is central to that particular way of thinking, of researching, of judging evidence and of building knowledge about the world. Academic subjects in schools therefore provide disciplined forms of criticality; disciplined ways of reading, writing and speaking; a disciplined understanding of how different types of knowledge are constructed. At GFS, we want all our teachers to possess a deep understanding of the foundational rules and principles of their subjects and enable their pupils to serve an apprenticeship within that particular subject domain.

This is why we regret that so much teacher training over the past decade has focused on the teacher's repertoire at the expense of the teacher's subject knowledge. At GFS, we place a primacy on developing a teacher's subject expertise over and above developing their teacher repertoire. We believe that expert teachers are subject experts at heart.

Subject Specificity

To put some meat on the bones of this view, we are going to look at how we have implemented a disciplinary curriculum in two subject areas: science and computer science. Corinne Flett is our Head of Science and Will Lau is our Head of Computing.

All of our subject curriculum models follow the same four-stage design process:



Science

I joined GFS in its founding year desperate to write a science curriculum that would develop my pupils' into scientists. Despite the necessity of aligning to national specifications, external examination was not the end point for my curriculum – merely a phase of testing that would allow pupils to demonstrate their scientific expertise on paper. Everything included in the science curriculum is sequenced back from what would be required to study science at university.

Content spirals from Year 7 where pupils learn the basics: atoms, cells, energy etc. From Year 8, while studying separate disciplines, pupils will always refer back to these fundamental ideas and build. We are not afraid to deliver the difficult content to younger pupils; for example, we teach Year 7 that gravity is not a force, as it is not measured in Newtons. Where possible, we ensure that teachers teach within their specialism, allowing the lesson dialogue to develop beyond the main objectives and answer the many questions of our curious pupils.

GCSE questions are used to assess basic understanding from Year 7 and we back the curriculum up with enrichment such as the British Science Association's CREST Awards, fieldwork on Woolwich Common and a trip to Thorpe Park to demonstrate Newton's Laws. Pupils act, speak and think like scientists while they are with us – if they are not doing that, then the curriculum is not doing its job.

The key outcome of the curriculum is that our pupils think like scientists. They enjoy coming to science lessons, even physics, and thrive off the challenge of grappling with difficult content. I know that the curriculum is working when I see the way a pupil is thinking both verbally and through their written work. They link multi-disciplinary concepts together, use ideas from one lesson to explain another and regularly ask questions beyond the curriculum and, annoyingly, beyond my own understanding.

Pupils know how to conduct scientific investigations independently, how to approach difficult problems and how to derive equations. The majority of our students have opted to take triple science for GCSE and we expect to achieve above 90% A*-C with these pupils in 2017 across all three scientific disciplines. This is the key measure for us – in a school where 50% of our pupils are in receipt of the Pupil Premium – that we teach an academically rich and rigorous curriculum that enables all pupils to think in more scientific ways about the world and to stand shoulder to shoulder with pupils from private schools and compete for the same university places and jobs.

Computer Science

In 2012, computer science was still in its infancy in secondary schools. There was no national curriculum, but there was a long running A level and a recently-introduced GCSE. However, computer science as an academic discipline at university level was well-established. It was therefore relatively straightforward to put together a five-year curriculum map by first establishing what skills, concepts and knowledge an expert computer scientist at degree level possesses. The biggest challenge was to create a framework for how computer scientists think. How do computer scientists break down problems, how do they solve problems, what knowledge is necessary in order to do this? Having established these fundamentals, we had a clear picture of what the whole game looked like, i.e. what it meant to be an expert in computer science.

I would then look at the outcomes for GCSE, as this would be the first set of exams that our cohort would sit. By mapping backwards from degree level to GCSE, we could then continue to map back to Year 7. I thought about how to introduce the concepts and knowledge

required at degree and GCSE level to 11 year-old students and built upwards from there. It is important not to shy away from difficult content; if students can address Von Neumann Architecture and start text-based programming in Year 7, they will have a solid foundation on which to build upon for Years 8 to 11. This iterative approach to curriculum design allows us to space and interleave GCSE content over five years. We would always use GCSE questions with our students, even from Year 7. To stretch our students, we even used degree level electronics questions when we covered logic gates and circuits.

The students arrive at Year 10 feeling confident as there is very little in the GCSE syllabus which they are completely unfamiliar with; all the keywords and concepts have been covered at Key Stage 3 to some extent and they realise they are simply building on existing knowledge. 50% of our cohort chose to study GCSE computer science compared to 5.5% nationally (The Roehampton Computing Education Report, 2015).

Many schools across the country start teaching text-based programming in Year 10 and there are a lot of skills to cover. However, having started text-based programming in Year 7, students are fairly fluent in sequence, selection and iteration along with various data structures. The only new concepts they are covering are file handling and data validation. The result is that even with a non-selective intake with no course entry requirements; we are predicting 16% points higher than the national average. In the practical programming unit, 52% are predicted A*-A.

I would recommend this iterative, spaced and interleaved approach to curriculum design.

Constantly Rectifying Mistakes

We are a restless school and far from happy with what we are doing. We see many flaws and mistakes that we want to rectify.

The next steps for us are:

1 Refining and streamlining how we organise and sequence the knowledge across five years. We do not talk about Key Stage 3 or Key Stage 4, instead we talk about a five-year curriculum experience. When our sixth form opens, this will then become a seven-year curriculum; with national exams a necessary inconvenience. Ultimately, we want to merge with a couple of primary schools and take this right down into Year 3.

2 Re-visit the core concepts and how we sequence these – have we got this right? Do we re-visit concepts at the right time and are we explicit about this?

3 Review the synergy between our assessment model and our curriculum model – does the assessment system focus enough on developing emerging conceptual understanding?

4 Looking at the relationship between teacher feedback and pupil understanding and how effective this is *vis-a-vis* multiple-choice questions. Re-visiting our focus on disciplinary writing and comparative judgements – is our assessment system working?

5 Ensure our CPD programme has a primary focus on teacher's subject expertise development – how do we know all our teachers are subject experts and maintaining their subject knowledge?

Advice for Others

Many schools have an obsession with the teacher's professional repertoire – how they ask questions, where they stand in a room, whether they check out misconceptions – and we have developed sophisticated lesson observation rubrics to look for these. However, very few schools have a focus on one of the core strands of expert teaching – teachers having a deep understanding of the structural rules and foundational principles of their subject.

I would much rather run a school where one of the measures of effective teaching was not how many different types of questions a teacher poses but how many peer-reviewed papers they have had published in a subject journal such as Teaching History. It is very easy to ask a 'Socratic' question but it is much harder to structure a sequence of lessons that enable meaningful understanding of a disciplinary concept.

We need to move away from thinking about individual lessons and instead think about 6, 10, or 20-week episodes. If you have a solid understanding of how your subject works then it is much easier for you to understand what misconceptions are likely to exist and to check for these rather than just asking 'good' questions because that is what you are observed against. We want our teachers to be subject experts first and foremost and see their job as enabling all of their pupils to serve an apprenticeship within that subject and to grow to love the subject and understand the way that particular subject operates.

So the key role of a headteacher should be in creating an environment and expectation that all teachers are subject experts and have an obligation to maintain their subject knowledge and engage in subject debate and discussion as much as develop any particular pedagogical skill.

Ian Bauckham

CEO, The Tenax Schools Trust and Executive Headteacher at Bennett Memorial Diocesan School

Tenax and Bennett

The Tenax Schools Trust is a Church of England 'mixed' multi-academy trust (MAT) in Kent and Sussex. It was founded from Bennett Memorial Diocesan School, an outstanding Church of England Academy (non-selective in fully selective Kent LA) of 1,500 pupils, and also a School Centred Initial Teacher Training (SCITT) and Teaching School. The Trust now consists of seven schools. We have two approved primary free schools, of which, one opened in September 2017. We are now considering free school proposals, including secondary.

Our educational philosophy is firmly grounded on mastery through practice for all in a traditional subject-based curriculum. The pedagogies that enable this philosophy to be translated into practice have been developed largely at Bennett Memorial, which despite, or maybe because of, its context in the selective economy, follows an unapologetically academic curriculum for all. For example, full EBacc (albeit with at least two separate sciences to GCSE – no combined science), a language for 90%, philosophy as a discrete subject for all through Years 7-9, and no 'alternative' non-academic provision before age 16. With our new schools in particular, a defining characteristic will be a similar curricular and pedagogical approach.

Why Support a Knowledge-Based Curriculum?

We support a knowledge-based curriculum, firstly, because there can be no thinking without knowledge. To attempt to teach, for example, creative thinking, or problem solving in the abstract is futile in our view. This is why, for example, when we wanted to find ways to develop pupils' abstract thinking (metacognition), we decided to do so through the medium of a curriculum subject with its own worthwhile body of knowledge – namely philosophy. The second reason is that knowledge empowers and is therefore socially important.

Conscious of the unequal access to opportunities for advancement young people face, we look to the knowledge base, in its broadest sense, which the most advantaged pupils acquire, and emulate it in what we do with pupils in school. Thirdly, we think that knowledge is primarily domain-specific, and is more effectively taught and learnt in subject areas. We see no contradiction between adults using knowledge for purposes which cross-subject boundaries, which of course they do, on the one hand, and the importance of teaching subjects as coherent domains on the other. For us it is about foundations: buildings can take many forms, but without solid foundations, they will all collapse. Mastering the knowledge of which each core subject consists is the foundation of future success. The important pre-cursor in our school was an understanding of Dweck's work on open mindsets; teachers needed first to understand that all pupils could learn given the right teaching, (the idea of neuroplasticity and consequently intelligence being mutable), before then developing understanding of and expertise in just what the 'right' curriculum and pedagogy actually are.

Curriculum, Training and Recruitment

Implementing a knowledge-based curriculum requires activity at a number of levels and in a number of domains. Four examples are listed below.

We worked to ensure the curriculum structure reflected what we wanted to say about the importance of subject specific knowledge. That meant eschewing approaches to the curriculum in Key Stages 3 and 4 which appeared to place the emphasis on, for example, '21st Century' skills or 'skills for jobs which do not yet exist', at the expense of deliberately and incrementally building subject knowledge. Instead, we prioritised discrete subjects across the board, and made sure wherever possible that we went back to the clearest expression of that subject. For example, we chose the separate sciences at GCSE for all, taught by subject specialists; we put Latin into the curriculum right through to A Level; we developed our own philosophy programme for Key Stage 3 that teaches key ideas in Western philosophy from Plato onwards, linked to the philosophers with whom each idea is most closely associated. This gives pupils important social and educational capital as well as developing the ability to handle abstract ideas grounded in the context of a subject discipline.

Next, we worked on the development of in-subject curriculum design and subject specific pedagogy. Our CPD centres on teaching teachers – for example, about the working memory and the long-term memory, the role of practice, and forgetting/forced recall in moving knowledge from the working to the long-term memory, the time-efficiency of direct instruction, and the importance of planning and sequencing knowledge to be taught subject by subject. To translate this into actual classroom pedagogy, we had to debunk the erroneous stereotype of knowledge-based approaches equating to 'sterile drilling'. Actually, very high order pedagogy is needed – for example, carefully honed explanations, accurate anticipation of error and misconception, careful sequencing to build on previous knowledge, tightly constructed practice, focused questioning to gauge learning rates, etc.

Initial teacher training has been a challenge because almost without exception new teachers trained elsewhere have little or no knowledge of these approaches or underpinning thinking. This was the main reason for our decision to move into direct provision of initial teacher training. For our trainees, we now have subject-by-subject defined curricula focusing on subject specific pedagogical knowledge, and a joint development programme which includes teaching key ideas and concepts supported by texts such as Bounce (Matthew Syed), Peak: Secrets from the new science

of expertise (Anders Ericsson), Hirsch, Willingham, The Science of Learning (Deans for Impact), Jo Facer's Mastery Learning, Daisy Christodoulou's Seven Myths, and more.

Where we do still recruit teachers from elsewhere, or trained elsewhere, there is significant 'unlearning' to be done. We have adapted teacher recruitment and selection processes to take account of this, and to signal to applicants what we will be looking for. This includes, for example, asking candidates about their theory of 'intelligence', requiring them to identify common subject-specific misconceptions and even simply asking them hard questions about curriculum content. Much teacher practice still operates in the educational equivalent of pre-Pasteur medicine: there is a knowledge of some effective treatments, but often no understanding about why they are effective, because there is no scientific or physiological knowledge underpinning them. We aim to get teachers who are not only competent but also consciously competent: they know ***why*** what they are doing is the most effective approach.

Modern Foreign Languages

As I have a particular interest in modern languages, and have recently completed a review of the subject for the Teaching Schools Council, I will explain our approach to the knowledge-based curriculum using this subject.

The core knowledge pertaining to a foreign language when learnt by a novice consists of vocabulary (words, the lexis), grammar (the rules, syntax, morphology) and pronunciation and its link to the written form (phonics, phoneme-grapheme correspondences). It is essential that language teachers understand this and that their curriculum planning must sequence the teaching of this knowledge and its practice to automaticity in structured but decreasingly scaffolded contexts.

The modern languages equivalent of 'discovery learning' or 'child centred' approaches, which we now understand to be not only time inefficient but also unfairly to disadvantage those pupils with least educational capital, is a 'natural acquisition' approach to language learning. A 'natural acquisition' approach emphasises pupil exposure to the language, exaggerates the role of 'authentic resources' at the expense of properly constructed practice or selected material, and tends to favour pupils spotting grammatical patterns for themselves rather than being explicitly taught them. It tends to emphasise the 'skills' of linguistic communication, listening, reading, speaking and writing, over the 'knowledge' which is a prerequisite for these skills (grammar, vocabulary and phonics), and it often turns the skills into the content leading to an ill-conceived curriculum. Moreover, it tends to plan courses around thematic topics (so holidays, the environment and so on) and in so doing to de-emphasise grammatical progression towards a coherent whole picture, as in such a schema, grammar is secondary to the 'topic' so is introduced in small disconnected chunks as pertaining to the thematic topic.

To move away from this approach, towards an approach that is more consistent with what we know about the knowledge-based curriculum and the role of planned and purposeful practice towards automatisation in the long-term memory, several things need to happen in both curriculum planning and sequencing, and in pedagogy. These include:

1. The stranglehold of the thematic topic needs to be broken so that vocabulary can be actively taught having regard to frequency of need in normal communication rather than on the basis of the topic (so we don't learn 'guinea pig' before we learn common verbs like 'put', 'take', 'give', 'say' etc, and so that the grammatical picture of the whole language can be systematically built over time).
2. Phonics need to be actively planned and taught, and front-loaded towards the start of the course, so that pupils are taught how to pronounce the language from the written form, and can convert the heard form back into the written form plausibly.
3. Grammar needs to be directly taught in the following order of play: explanation of form and use; identification of the form and use in written and spoken forms with other clues (tense-related words like 'yesterday') stripped away; practice in output language in structured contexts; practice in output language in freer contexts (NB: this is emphatically not the 'grammar translation' approach of yesteryear).
4. We need to eschew the 'lazy' shortcut of teaching pupils whole memorised phrases without teaching them to deconstruct them and reapply the language in different contexts and to different ends using their grammatical and lexical knowledge.

The Impact of Implementing Knowledge

We see the following benefits of introducing a knowledge-based approach:

- **Higher standards in terms of outcomes.** Progress in most elements is very high: so in 2016 P8 maths progress overall is +0.6, EBacc element +0.8 – and there is no compromise on the academic curriculum (no IGCSE English and certainly no ECDL).
- **Better informed and more confident teachers**. Teachers are able increasingly to articulate the underlying rationale for their teaching in terms of knowledge gain, purposeful practice, working and long-term memory retention, and justify their planning in these terms if asked.
- **Pupils who have a stronger sense of their own learning and progress**. Pupils and parents tell us that they are aware of their progress because it is quantifiable in terms of actual knowledge mastered – a boy in a Year 9 English class this week, when asked what he had actually learnt, immediately answered with some high level vocabulary, including "munificence"; he reported it and a group

of other 'hard' words had been directly taught and practised.

- **Closed or closing gaps between the disadvantaged and others**. In 2016, the P8 score for disadvantaged pupils was +0.44 – a knowledge-based curriculum is less disadvantaging for those with lower levels of educational capital than a 'hard-to-define' skills-based one.
- **A stronger basis for observation and feedback because senior staff are clearer themselves about what they are looking for.** Observation feedback is less based on an observer's preferences and more on a shared narrative of effective teaching.
- **A stronger vehicle for teacher professional development leading to more measureable, sequenced and less 'scattergun' teacher development.**
- **Increasingly, student preferences for the more traditional subjects**. Others have withered on the vine sometimes even before we have cut them.

The Next Steps

We are planning to take the next practical steps:

- **More development of teacher knowledge and expertise**. This is always going to be work in progress, and teachers can never be expert or confident enough. Also, as more and better quality literature, research and evidence become available, there is constant work to do to keep teachers at the cutting edge. Because of the paucity of good training and development underpinned by good theory externally, we need to undertake most of it internally.
- **Research informed teaching practice strengthened and the school to be a beacon for research knowledge mobilisation**. We would like to become a laboratory for knowledge mobilisation from quality research to teacher practice. I am a trustee of NFER and am all too aware of the yawning gap between research and practice. Most teachers currently are not influenced even by some of the best research.
- **Further development of initial teacher training to provide outstanding and distinctive content rich initial training**. As a SCITT, we have a clear mission to train teachers, and there is a very significant job to be done in changing expectations of what teacher training gives participants. Our SCITT is distinctive in its emphasis on subject specific curriculum and pedagogy which is informed by good research and evidence, and by the insights of cognitive psychology.
- **Extension of these approaches more consistently into primary phase**. More work needs to be done on developing subject-specific pedagogy in the primary phase.
- **Contribution forming future system leaders with better understanding of the role of knowledge and pedagogy:** we are a lead partner in a consortium of organisations offering the new NPQEL qualification for executive leaders.

Advice for Others

As others consider creating and implementing their own knowledge-based curricula, we would have the following advice from our own experiences:

- Make sure a small group of key change leaders understand the principles and have a solid background knowledge derived from good quality reading.
- Ensure there is buy-in at leadership level – it won't work if leaders are pulling in the wrong direction.
- Ensure that there is moral commitment articulated at school leadership level to the potential of every child to succeed, and that that commitment goes deep enough to provide a driver for teachers to understand how that success can be achieved.
- Make progress on open mindset thinking first, or you may get stuck on teachers who think that some children are just not 'bright' enough for a knowledge-rich curriculum.
- Use the school's professional development programme to introduce and discuss some key think pieces.
- Think about the language that you use to talk about learning and progress in all arenas: teacher talk, observation feedback, reports, meetings, talking to parents, and make sure note of it implicitly undermines the principles you are espousing. It is commonplace for teachers, headteachers, politicians and parents to talk about whether young people are bright, intelligent, able, or not; equally, it is commonplace to hear talk of 'engagement', 'differentiation', 'skills' which can often betray very poor thinking about knowledge, pedagogy, and mastery. We even got Ofsted to remove all references in our 2012 report to 'able' students, and to remove the word 'ability' – we referred only to attainment as we contended that speaking of ability created an implicit ceiling to mastery which we were not prepared to accept.
- Seize every opportunity to talk about pedagogy and the thinking and research behind it – at every staff gathering, every training opportunity, and every assembly, so teachers, and students, hear it from all sides.
- In recruiting teachers, try to find people who are at least open to non-activity/skills-based approaches to teaching, even if their understanding of the role of knowledge and mastery is still underdeveloped.
- Accept that some teachers may simply set themselves against what you are trying to do. Don't panic too much if you lose a few, providing they are the 'right' ones to be moving on.

- Work hard with senior colleagues and others who regularly undertake observation and feedback to make sure that this process supports rather than subtly undermines your aims and philosophy. Language is very important in this process. You will need to practise good feedback, and model it yourselves.
- Finally, be 'loud and proud' about it as soon as you think you have a critical mass with you. Start 'selling' the school based on what you are achieving. Think about how to convert the language of subjects, mastery, knowledge, practice, sequencing and so on into easy, media-friendly terminology to help you, depending on your context.

Lynn James

Executive Principal, Outwood Grange Academy Trust

Outwood Grange

Outwood Grange Academies Trust (OGAT) is at the forefront of system leadership and has an enviable proven track record in transforming schools more often than not from a category of concern. Since 2007, we have worked in more than 25 schools across 11 local authorities in both the primary and secondary sector. We are proud of the improved life chances given to young people in schools under our leadership. The former Her Majesty's Chief Inspector of Schools stated that, of the Key Stage 4 value added scores for MATs with the largest number of secondary schools, OGAT was ranked first for improvement in value added score and described as "significantly above average"[11].

The Necessity of Knowledge

The necessity for a knowledge-rich curriculum is not intensely discussed in schools. Words such as traditional, academic and restrictive find space in conversations but ideas like social mobility, equity and knowledge-based economy seldom do. To truly reduce inequality and ensure access in an ever-transforming economy, higher levels of numeracy, literacy and critical thinking will be required. This means more students must achieve a higher attainment standard to guarantee future employment security for themselves and to ensure the nation can compete in an increasingly global marketplace.

Teaching excellence is at the heart of a knowledge-rich curriculum: it needs to thrive, its excellence be shared and any unacceptable variability addressed because, "if you get one of the best teachers you will learn in six months what it takes an average teacher a whole year to teach you. If you get one of the worst teachers, the same learning will take you over two years."[12] An effective knowledge curriculum relies on leaders' ability to promote excellence, cultivate challenge and encourage all to embrace the struggle inherent in learning. Learning must never be too easy or its rewards lose value and its comprehension lacks permanence.

If the economy's future lies in knowledge what does this mean for schools? Future employment will necessitate an innovative workforce that can anticipate the aspirations and needs of a dynamic consumer market. Flexibility to alter careers or develop new skills in this shifting economy will be essential. Schools are often criticised for not teaching employability skills but it is not possible to teach young people all the skills of employability. What schools do have a duty to ensure is that they give students a love of learning and more importantly an ability to discover, internalise and apply knowledge because the knowledge economy students will work within will be one of mutual learning and continuous innovation. Knowledge economies require a workforce with the capacity to share, create and apply new knowledge continuously over uncertain times.

The debate in schools is not whether we embrace the English Baccalaureate, life without levels or linear examinations; it is about the need to promote access to a knowledge-rich provision because knowledge economies work best when they are developed in conjunction with knowledge societies. The design of the new English curriculum was influenced greatly by Hirsch's[13] philosophy on cultural literacy advocating that schools be unapologetic about teaching knowledge to address the deficits in cultural capital within their school population because this raises attainment and minimises future inequality. Embracing educational change for us is less about performance tables and more about ensuring our curriculum prepares our Trust's 20,000-plus students for their future economic life. This is fundamental to our vision to put students first: we are relentless about raising standards because it ensures equity and transforms lives.

Access for Students

Our knowledge-rich curriculum entitles all children, irrespective of starting point, access to a broad and balanced programme. Recent revisions have fashioned an innovative, knowledge curriculum, which maximises students' potential to develop knowledge, skills and qualities which will serve them well in later life. Flexible curriculum access, however, does not simply translate into achievement. For success to occur, we promote high standards of quality in learning, behaviour, teaching and teacher education recognising that quality teaching is about more than effective content knowledge; it is about excellent knowledge of teaching and learning and importantly of how to teach one's subject.

We develop teaching capacity by providing permanent, supernumerary subject-specialist directors who work across our academies. They support and challenge teachers to maximise impact advising on subject pedagogy, modelling quality practice and using their subject expertise to support effective planning and assessment. Specialists in Special Educational Needs and Disabilities (SEND) and attendance help further secure the curriculum access critical to academic success. The Outwood Institute of Education and the multi-hub Teaching School Alliance of our five teaching schools provide programmes that support the quality development of the profession from initial teacher training to the training of Multi Academy Trust CEOs. Flexible knowledge economies require their workforce to be committed to lifelong learning and responsive to retraining and we want our teachers to be proactive learners. Facilitating collaborative work, shared subject-specific training and teacher-led CPD across our family of schools encourages shared accountability

11 Her Majesty's Chief Inspector of Schools Ofsted Annual Report 2015-16
12 Assessment for Learning: why, what and how* Dylan Wiliam Institute of Education, University of London
13 E.D. Hirsch JR (2016) Why Knowledge Matter rescuing our Children from Failed Educational Theories

and ownership leading to more effective sharing of information and solution development.

Former Secretary of State for Education Michael Gove sought to, "completely overhaul the curriculum – to ensure that the acquisition of knowledge within rigorous subject disciplines is properly valued and cherished"[14]. In practice, the purpose of a knowledge curriculum is less about valuing subjects and more about valuing students' ability to access them. Our approach to our three-year Key Stage 4 curriculum is flexibility. English Language, Literature, mathematics and science (core, additional and triple) are taken by all students alongside non-examined courses in PE, PSHE and RE. Students choose three subjects within their guided pathway allocation, to start in Year 9. To balance their course coverage up to two non-EBacc subjects can be studied for possible certification in Year 10.

In allowing students to manage their examination portfolio over two years, the pressures that they feel by mass entry in one single year are reduced. This early entry route aids students' motivation for "the value of achievement lies in the achieving."[15] Such success helps shape students' self-efficacy and expectation for future performance by increasing their sense of competence.[16] Clear goals are routinely embedded in lessons, schemes of work and our assessment system, setting regular achievable targets to increase learning, sustain motivation and strengthen persistence. Achievement comes before motivation – "the effect of achievement on self-concept is stronger than the effect of self-concept on achievement"[17] – so opportunities allowing students to experience achievement are maximised and promoted in daily learning conversation between staff and students.

Securing subject fluency requires the meaningful practice of knowledge. Building structures into our curriculum we aim to facilitate deliberate practice: for example, a range of supplementary provision is offered for core subjects through daily tutor time sessions, one-to-one tutoring, after school classes, master classes and option block lessons. Within this provision, the repeated coverage of difficult content establishes the interleaving of knowledge strengthening confidence and fluency in a sustained manner. Students become more accepting of error and struggle empowering their resilience. The provision fosters buy-in: students become motivated by their improving subject fluency and this improves engagement across the curriculum.

Rich entitlement to English Baccalaureate qualifications is engineered with all students studying, over the entire three-year Key Stage 4, at least one of geography, history, modern foreign language or computer science (though not contributing directly to the full EBacc). Students for whom it is appropriate study a second EBacc subject to attain the full EBacc championing routes into higher education by undertaking these facilitating subjects.

Teaching for Mastery

Any knowledge curriculum requires balance between knowing the 'what' of content and the 'how' of application. A strong work ethic promotes the self-efficacy necessary for knowledge acquisition whilst a culture of high expectation builds aspirant self-belief. Pedagogy is important, but it must be less about tricks and more about how interleaving of topics and deliberate practice enables students to cumulatively and progressively deepen subject understanding.

Subject specialism becomes increasingly important both in terms of teachers' own knowledge and their understanding of how to transmit this to students: content delivery does not mean students possess that knowledge for themselves. With this in mind, we refocused Key Stage 3 mathematics adopting a mastery curriculum from September 2015. "The aims of the new curriculum and Mathematics GCSE are challenging and teaching for mastery could be an effective way to achieve them."[18]

Historically, Year 7 students often regressed in mathematics. Early amelioration through teaching mastery is evident across our academies with 85% of Level 5 students on entry making at least one sub-level of progress. Initial concerns that the approach might limit the progress of the more able students proved unfounded as this cohort attained on average 0.8 of a grade higher than similar students 2 years previously. Our teachers report, that students are demonstrating a deeper conceptual understanding that is ensuring better retention and aiding transference between topic areas. The mastery curriculum is reducing the anxiety that often prevents engagement and access.

Our expectation is that all students are capable of achieving high standards in mathematics. The core objectives from the Key Stage 3 programme of study are covered by all students however, taking influence from the Shanghai maths programme, more time is dedicated to individual topics enabling mastery of key concepts before moving on – for example, addition and subtraction of fractions may be taught over a sequence of eight lessons.

Most students progress through the content at the same pace but those grasping concepts more rapidly are challenged by sophisticated problems before accelerating to new content. Improved differentiation by depth means the most-able experience challenging activities that link different areas of mathematics and expose

14 What is Education for? Speech by Michael Gove MP to the RSA 30 June 2009
15 Albert Einstein To D. Liberson, October 28, 1950. AEA 60–297
16 Bandura A. (1997). Self-efficacy: The Exercise of Control. New York: Freeman.
17 Muijs D and Reynolds D (2011) Effective Teaching: Evidence and Practice Sage Publication
18 Charlie Stripp Director of the NCETM

them to a variety of problem solving and reasoning activities to better deepen their knowledge. Similarly, for lower attaining cohorts, an increased use of concrete manipulatives and pictorial representations support their learning and consolidate their Key Stage 2 work.

Activities provide opportunities for students to demonstrate fluency and reasoning. Problem solving is part of the process – not merely an extension for the most able. Deliberate practice and consolidation play a central role in tandem with flexibility and variety so that students are not confined by an inflexible rule or procedure. This enables students to see links and transfer knowledge across topics enhancing fluency and understanding of underlying mathematical concepts. Teachers' questioning is more precise; monitoring conceptual and procedural knowledge and students are regularly assessed to identify intervention needs via gap analysis so all secure understanding.

Maths mastery is informed by work in our primaries with the Shanghai teacher exchange. Teachers who have observed the Shanghai teachers found it inspirational: "I left enthused and motivated to adapt my own practice. To have then helped write and deliver the mastery SOW has been an amazing experience. The impact this experience has had on my teaching and the students is remarkable; I am eager to learn more and now could not imagine teaching in any other way!"

Teachers initially grappled with how to plan activities to deepen understanding and enable students to demonstrate their mathematical thinking and application in multiple ways when faced with a new problem. Providing methodical curriculum design, carefully crafted lessons and resources, CPD and support opportunities has focused pedagogy offering strategies for individual support and timely intervention.

Ensuring Quality Learning

Curriculum resides beyond subject allocation; it pertains to the holistic experience and cultural conditions necessary for all children to achieve – be it five hours of English and one hour of Art, a word of the week in every lesson to extend vocabulary, reading programmes and libraries promoting a love of reading or events, assemblies and enrichments that broaden experience and develop values.

High academic standards are made possible by a relentless focus on learning and a knowledge foundation that has strength and depth. This best occurs in an environment that places the right to learn, undisturbed by others, at its heart. We are unapologetic in our belief that students are taught responsibility for their own behaviour. Our staff hold high expectations for attitudes to learning and consistently balance discipline with academic learning conversations and rigour. This ensures students' self-esteem is linked to learning not to negative attention seeking behaviour. Our student centred ethos and the efficacy of our shared systems foster engagement providing a climate for learning that enables sustained concentration in lessons and rewards effort. Perhaps Martin Luther King captured this reasoning best when he said, "complete education gives one not only power of concentration, but worthy objectives upon which to concentrate."[19]

Everything we do in school must ensure quality learning because, "if you're serious about raising student achievement, you have to change what happens in the classroom"[20]. We have enhanced our lesson observation feedback protocols and are currently reviewing our marking policy to better augment meaningful practice. Bjork contends that if we want to improve learning, the curriculum requires more "desirable difficulty"[21]. Work is underway to strengthen our Key Stage 3 curriculum raising the level of challenge to meet age-related expectation and honing how we track progress from respective starting points, acknowledging that our Key Stage 3 approach needs to mirror our forensic approach at Key Stage 4. Reassessing our Key Stage 3 teaching will ensure students' curiosity, interest and ability is stretched not capped.

The efficacy of any knowledge curriculum depends on schools' continual motivation to secure quality pedagogy and in their drive to increase the status of both what is learnt and who delivers it. Fundamentally, we all have a responsibility to give children the chance to be excellent, a chance to be empowered through a curriculum that is properly sequenced to allow the incremental accumulation and appreciation of knowledge.

The aim is to establish children's positive attitude to and experience of learning, giving them an aptitude to think for themselves and apply their understanding in different contexts – ensuring their employability skills are harmonised with economic opportunities open to them in the knowledge economy of their future.

19 Martin Luther King - The Purpose of Education January 1947 Atlanta GA
20 Assessment for Learning: why, what and how* Dylan Wiliam Institute of Education, University of London
21 http://www.psychologyinaction.org/2011/01/04/desirable-difficulties-in-the-classroom/