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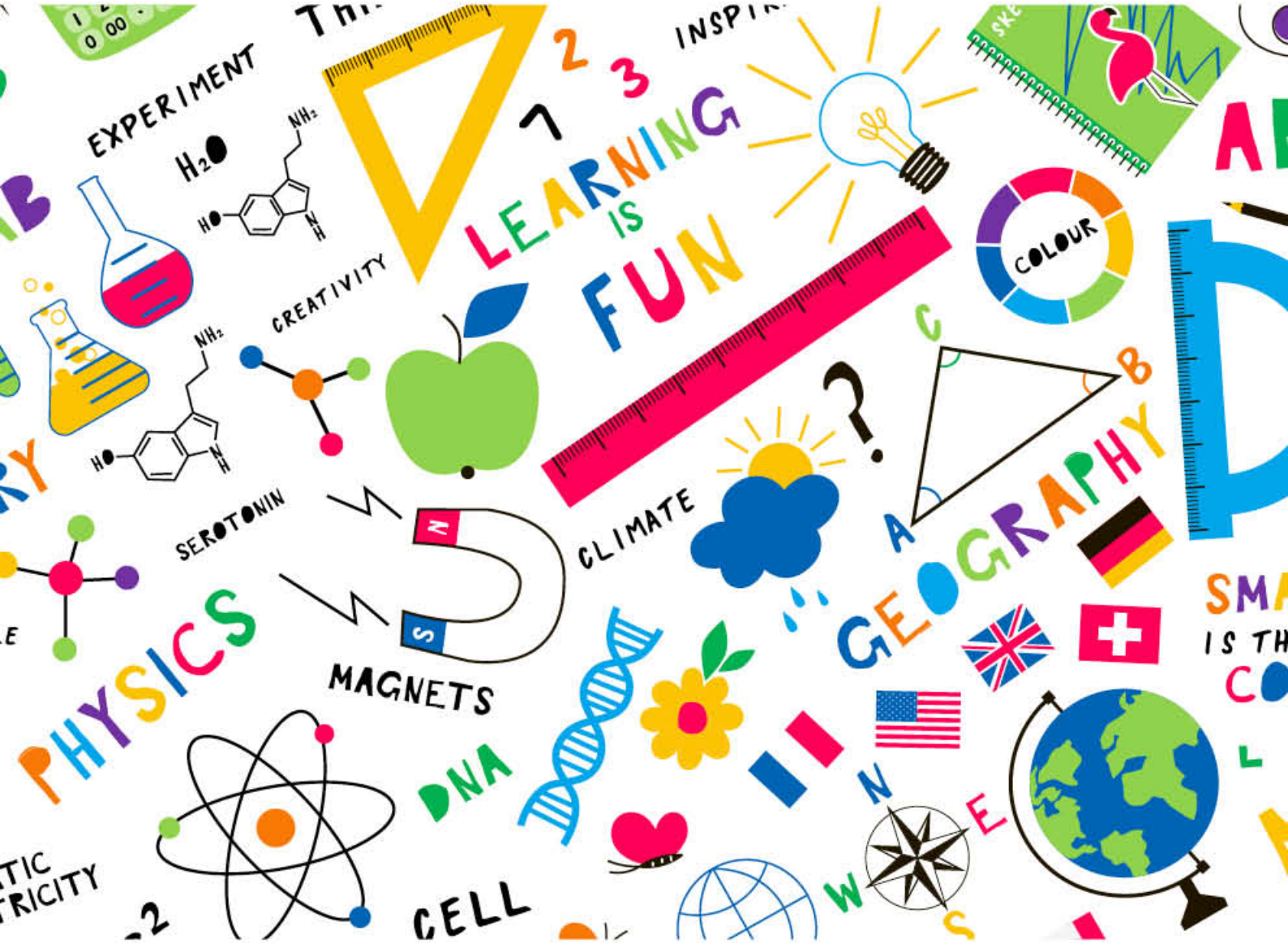


Curriculum design

The new Ofsted Education Inspection Framework has thrust the curriculum into the spotlight. The intent, implementation and impact of what we teach are under scrutiny as inspectors look for a broad and balanced curriculum. ***Matt Bromley*** offers us a four-step plan for curriculum design and asks some key questions about what we teach...

A four-step plan for curriculum design...

The school curriculum is a hot topic in England thanks in part to Her Majesty's Inspectorate. Ofsted implemented its new Education Inspection Framework (EIF) in September 2019, which places the quality of the curriculum at its heart (Ofsted, 2019).

As we all know by now, Ofsted defines the curriculum according to its intent, implementation and impact...

A new vocabulary for curriculum provision

Intent

When inspecting "intent", inspectors will evaluate whether the curriculum builds towards clear "end-points". In other words, they will want to see clear evidence of what pupils will be expected to know and do by each of these end-points, be they the end of a topic, module, year, key stage or phase of education.

Inspectors will also want to see evidence that the school's curriculum is "planned and sequenced" so that new knowledge and skills build on what has been taught before, and towards these end-points.

As well as being clearly sequenced and building towards clear end-points, Ofsted says that the curriculum should also "reflect the school's local context" by addressing typical gaps in pupils' knowledge and skills.

The curriculum should "remain as broad as possible for as long as possible", too, and pupils should be afforded the opportunity to study a strong academic core of subjects, such as those offered by the English Baccalaureate (EBacc).

Inspectors will want to see evidence that there are "high ambitions for all pupils "and will want to see that the school does not offer disadvantaged pupils or pupils with SEND a reduced curriculum.

There are several mentions of "cultural capital" in the schools inspection handbook (Ofsted, 2019). Ofsted says that inspectors will judge the extent to which schools are using the curriculum to equip pupils with "the knowledge and cultural capital they need to succeed in life".

Ofsted's definition of this knowledge and cultural capital matches that found in the aims of the national curriculum: namely, that it is "the essential knowledge that pupils need to be educated citizens, introducing them to the best that has been thought and said and helping to engender an appreciation of human creativity and achievement".

Implementation

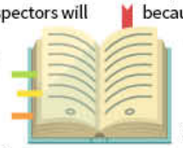
Under curriculum implementation, inspectors will seek evidence of how the school curriculum is taught at subject and classroom level. They will want to see how teachers "enable pupils to understand key concepts, presenting information clearly and promoting appropriate discussion", how teachers check pupils' understanding effectively, identifying and correcting misunderstandings, and how teachers ensure that pupils embed key concepts in their long-term memory and apply them fluently.

Further, they will want to see if the subject curriculum that classes follow is designed and delivered in a way that "allows pupils to transfer key knowledge to long-term memory" and it is sequenced so that new knowledge and skills build on what has been taught before and towards defined end-points.

Inspectors will want to see evidence that teachers use assessment to check pupils' understanding, and they will evaluate how assessment is used in the school or college to support the teaching of the curriculum, but – crucially – not in a way that substantially increases teachers' workloads.

Impact

Under impact, Ofsted says that national assessments and examinations are useful indicators of the outcomes pupils in a school achieve, but they only represent a sample of what pupils have learned. As such, inspectors will balance these with their assessment of the standard of pupils' work from the first-hand evidence they gather on inspection.



Ofsted says that learning in schools must build towards a goal. As such, at each stage of pupils' education, they will want to see evidence that they are being prepared for the next stage of education, training or employment, and will consider whether pupils are ready for the next stage.

Beyond Ofsted

Now that we have a good understanding of the Ofsted context, let me suggest four steps for curriculum design:

1 Agree the vision.
2 Set the destination.
3 Assess the starting points.
4 Identify the way-points.

I would add a fifth and sixth step to these four: define excellence and diminish disadvantage. However, given space limitations – and the fact I have recently focused on disadvantage and Pupil Premium practice in *SecEd* (Bromley, 2019) – I will focus here on the first four steps...

Step 1: Agree the vision

Before we can embark upon the complicated process of curriculum design, we must first understand what a curriculum actually is. After all, you would not try to manufacture a widget without first knowing what a widget looks like, what it does, and how it works.

Professor Dylan Wiliam, in his SSAT pamphlet *Principled Curriculum Design* (2013), said: "In recent years in England, discussion of the school curriculum has been all but absent. This neglect has been largely driven by the adoption in 1988 of a national curriculum for schools in England and Wales. Many teachers, leaders and policy-makers assumed that because the government had specified what schools were required to teach, then no further discussion of the issue of curriculum was necessary."

Prof Wiliam argues that this belief is mistaken for two reasons: "The first is that the legal framework of the national curriculum specified only what schools were legally required to teach – any school was entirely free to teach whatever it wished in addition to the prescribed national curriculum.

"The second is that the real curriculum – the lived daily experience of young people in classrooms – requires the creative input of teachers. For example, the national curriculum may require that students learn about negative numbers, but the kinds of analogy that a teacher might use to teach this topic (e.g. heights above and below sea level, temperatures above and below zero, positive and negative bank balances, and so on) must be chosen with an understanding of the students, their experiences, and a range of other contextual factors."

The real curriculum, then, is created by teachers, every day. In fact, the "real" curriculum consists of at least three distinct elements, of which the national curriculum is only one:

1 The national curriculum which is that prescribed by statute and consists of the core and foundation subjects.

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Matt Bromley

...is an education journalist and author with 20 years' experience in teaching and leadership. He works as a consultant, speaker and trainer and is the author of numerous books for teachers including Making Key Stage 3 Count and How to Learn.

Visit www.bromleyeducation.co.uk and follow him on Twitter @mj_bromley. To read his previous best practice articles for SecEd, visit http://bit.ly/1Uobmsl

2 The basic curriculum which describes the statutory requirements for curricular provision beyond the national curriculum, comprising the requirements in current legislation for the teaching of RE (within the guidelines of the local Standing Advisory Committee for Religious Education), sex education, careers education, and opportunities for work-related learning. These are compulsory requirements, but schools are able to determine for themselves the specific nature of this provision.
3 The local curriculum which is one that schools are free to adopt in order to complement the national and basic curriculums with other curricular elements that are determined at school or community level. Often, these will reflect the individual nature of the school and its community, and perhaps its subject specialism(s).

The national curriculum

We can trace the evolution of the national curriculum in England back to a speech by Sir James Callaghan at Ruskin College, Oxford, in 1976 (for a full text of this speech, see UKPOL, 2015). Certainly, this speech signalled the state's intention to assume a greater role in deciding, not just funding and facilities, but what was taught in its schools.

In his so-called "Great Debate" speech, Callaghan argued that education should "equip children to the best of their ability for a lively, constructive place in society, and also to fit them to do a job of work. Not one or the other but both".

It took until the Education Reform Act of 1988, which led to the publication of the first national curriculum, for Callaghan's dream to be realised.

The original national curriculum was a substantial document. Indeed, when it was first published, prime minister Margaret Thatcher famously decried that she "never meant it to be this big". As such, each subsequent review of the national curriculum has seen the documents slimmed down and simplified.

The current version of the national curriculum (DfE, 2014) says that "Every state-funded school must offer a curriculum which is balanced and broadly based and which promotes the spiritual, moral, cultural, mental and physical development of pupils at the school and of society, and prepares pupils at the school for the opportunities, responsibilities and experiences of later life."

Furthermore, the national curriculum provides pupils with "an introduction to the core knowledge that they need to be educated citizens. It introduces pupils to the best that has been thought and said; and helps engender an appreciation of human creativity and achievement".

With this last sentence, the curriculum borrows from Matthew Arnold, who said that a good modern society can only come about when all of its citizens are educated in "the best that has been thought and said in the world" (Arnold, 1869).

The wider curriculum

Oates et al (DfE, 2011) argue that "education can be seen, at its simplest, as the product of (an) interaction between socially valued knowledge and individual development. The school curriculum structures these processes" (see also Oates, 2014).

The Qualifications and Curriculum Authority (QCA, 2000), meanwhile, offered a broader definition which included "everything children do, see, hear or feel in their setting, both planned and unplanned".

The unplanned parts of the curriculum are often referred to as the "hidden curriculum", a term first used by Phillip Jackson in 1968 in his book *Life In Classrooms*.

Jackson argued that what is taught in schools is more than just the formal curriculum and that schooling should be understood as a socialisation process whereby pupils receive messages through the experience of being in school, not just from what they are explicitly taught in lessons.

The hidden curriculum, therefore, includes learning from other pupils, and learning that arises from an accidental juxtaposition of the school's stated values and its actual practice.

When designing a curriculum, therefore, we need to think carefully about all the ways in which pupils learn, not solely in structured lessons but also in the space between lessons and in the behaviours and values of the adults working in the school.

As Dr John Dunford (2012) puts it: "The school curriculum is not only the subjects on the timetable; it is the whole experience of education."

The curriculum, therefore, can be found, not just in a policy statement, and certainly not in the timetable or even in the national curriculum, but in the subjects and qualifications on the timetable, in the pedagogy and behaviours teachers and other adults use, in the space between lessons when pupils interact with each other, in approaches to managing behaviour, uniform, and attendance and punctuality, in assemblies and extra-curricular activities, and in the pastoral care and support offered to pupils.

In short, in the holistic experience every child is afforded in school.

> "Education can be seen, at its simplest, as the product of (an) interaction between socially valued knowledge and individual development"

Curriculum vision

Once you have clearly defined what is meant by the term "curriculum" in your school, the next step is to agree and articulate a clear and shared vision setting out what you think is important and what you regard as the purpose of education.

The vision should comprise a list of the broad and rich learning experiences each pupil in the school can expect in each subject as well as outside of lessons.

This vision should refer to the hidden curriculum and be cognisant of the fact that pupils' learning is not confined to the classroom; they learn from each other and from the way in which all the adults in school behave.

The reason I recommend that you start the process of curriculum design with a vision is because this vision will provide the benchmark against which all subsequent decisions about curriculum content, structure, sequence, monitoring, evaluation and review can be tested.

As such, I do not advocate the writing of a vision statement which is then locked away in a dusty drawer, but of engaging in a meaningful debate about why your school exists and what it seeks to achieve for its pupils and community, and why these purposes and aims are important.

Broad and balanced?

You need to articulate what your school interprets as being a broad and balanced curriculum. A broad and balanced curriculum is, at

least to begin with, about ensuring pupils are prepared for the next stages of their education, employment and lives – that they are developed holistically, and leave school skilled and knowledgeable employees and well-rounded, healthy and active citizens of the world. But what else?

The 2002 Education Act requires schools to provide a "balanced and broadly based curriculum" – a phrase echoed in the national curriculum – which:

promotes the spiritual, moral, cultural, mental and physical development of pupils at the school and of society, and prepares pupils at the school for the opportunities, responsibilities and experiences of later life.

The regulatory standards for independent schools (DfE, 2016) provide a useful way of thinking about breadth. The standards require schools to provide a curriculum that gives pupils experience in the following areas: linguistic, mathematical, scientific, technological, human and social, physical, and aesthetic and creative, so that it promotes spiritual, moral, social and cultural development.

A broad curriculum, therefore, might be regarded as one in which there are enough subjects on a pupil's timetable to cover all these experiences. Narrowing the curriculum for less able pupils or stretching GCSE study into key stage 3 clearly runs counter to the definition of breadth. A broad curriculum offers all pupils a wide range of subjects for as long as possible.

A balanced curriculum, meanwhile, might be regarded as one in which each subject is not only taught to all pupils but is afforded sufficient space on the timetable to deliver its distinct contribution. The danger here is that some subjects, such as art, music, and languages, are squeezed out of the timetable by English, maths and science. It is not uncommon for English to have five or more lessons on the timetable per week and art just one, or for the arts to operate on a carousel whereby design technology is only taught for one term of the year.

> *Narrowing the curriculum for less able pupils or stretching GCSE study into key stage 3 clearly runs counter to the definition of breadth*

The role of senior leaders

In truth, the process of curriculum design is largely within the purview of middle leaders and teachers because subject specialists must design a curriculum that befits their discipline.

An English curriculum is distinct from a maths curriculum, which is distinct from a science curriculum and so on. The key concepts are different and will likely take different forms; the ways in which experts in each field think differ, too – for example, if you apply a scientific way of thinking to the study of theology, it will fail, and vice-versa.

Language and its meanings also differ in each subject – for example, to "analyse" something in English is not quite the same as to "analyse" something in history, maths or science.

The shape of the curriculum in each subject discipline is different, too – some are linear, some helical or spiral in nature – and so the time it takes pupils to progress through a curriculum and the path they must take is also going to be different.

In some subjects, we may see a neat line of progress as pupils incrementally increase their knowledge and skills and build upon their prior learning. In other subjects, pupils will likely go backwards as well as forwards, or will succeed in one topic but then be required to learn a different, unconnected set of skills and knowledge, which means any attempts to extrapolate progress between the two points is meaningless.

In short, each subject is a subject precisely because of the differences between it and other subjects, and so subject specialists must be allowed to design a curriculum that works in their discipline. As a secondary English specialist, I can design an English curriculum for key stages 3, 4 and 5, but I could not do so for science.

It would be easy, therefore, for senior leaders to feel impotent, disenfranchised and divorced from the process. However, I think senior leaders do have several key roles to play...

Vision and clarity

First, it is the responsibility of senior leaders to agree the vision for their whole-school curriculum. This, as we have already explored, involves defining what is meant by the term "curriculum" and making decisions about the national, basic, local and hidden curriculums.

Breadth and balance

Second, senior leaders are key to determining how broad and balanced the whole-school curriculum will be and why. They must make decisions about which subject disciplines matter most and which subjects are afforded the most time on the timetable. For example, senior leaders must be attuned to their community and pupil needs and if their school has a majority EAL population, they may decide to timetable more English lessons.

Purpose and outcomes

Third, senior leaders articulate the purpose of education in their school – and therefore guide middle leaders in determining the broad end-points to be taught. For example, senior leaders must have an overview of what qualification types and levels are offered in their school and why certain specifications and modules are better than others. Only senior leaders have the necessary oversight of the whole-school curriculum to be able to make these decisions.

Senior leaders can also help their middle leaders and subject specialists determine the end-points they plan to teach within their subjects by asking some broad questions about their curriculums under the headings of why, what, when and how:

- Why teach this subject? Why does it matter? In what way is it or will it be useful?
- Why teach this qualification?
- Why (for examined courses) use this awarding body and this specification?
- Why teach this module/topic? Why is this knowledge more important than other knowledge?
- How does this subject relate to other subjects? How will you make the links explicit?
- What do you expect pupils to know and be able to do at the end of the topic/scheme/term/year/course/school?
- Why is this knowledge important? Who decides and why?
- What knowledge and skills will be most useful to pupils in the future? Says who? Is this likely to change?
- What knowledge gaps (including vocabulary) might some pupils need to have filled before they can access the curriculum? How will you identify the gaps and the pupils? How and when will the gaps be filled?
- When do you expect pupils to have acquired this knowledge/these skills? Why then?
- What must be taught before and after this knowledge/these skills? Why?
- How will the learning be sequenced? Is this a logical order?
- How will the curriculum build increasing complexity over time?
- Does each entry-point to the curriculum lead to a higher level of study?
- How will this knowledge/these skills be taught to ensure long-term learning? Will all teachers teach in this manner? How will you know?
- How will prior knowledge be activated? How will pupils be helped to transfer knowledge/skills from one context to another, and from the classroom to life/work?
- How will retrieval practice be built into the curriculum to ensure prior learning is kept active?
- How will the curriculum be spaced and interleaved to aide long-term retention?

Teacher workload and skills

Finally, and perhaps most critically of all, senior leaders are the gatekeepers and defenders of staff skills and time. They have a duty to provide appropriate training to staff to ensure they are skilled at curriculum thinking, and they have a duty to provide protected time for staff to engage in the time-consuming task of designing, delivering and reviewing the curriculum in their subjects.

With a focus on teacher workload, senior leaders must do all they can to prevent this renewed focus on curriculum design adding to teachers' workloads and must decide what to stop doing in order to carve out the time for teachers to focus their energy on "the real substance of education".

Step 2: Set the destination

Once schools have agreed the vision for their curriculum, they must – also under the broad heading of intent – set the destination of that curriculum.

If you want to find directions on Google Maps, first it will ask you "where to?" then it will ask you "where from?". Curriculum design is no different.

First, we need to know what the intended outcomes of our curriculum are – what we want pupils to know and be able to do at the end. Then we need to know from where pupils are starting their journeys towards these clear end-points. With these two pins stuck in our map, we can begin to plot a course.

So, how do we decide where our pupils are headed?

In *Knowledge and the Future of School* (2014), Young et al talk of "powerful knowledge" as a type of knowledge that "allows those with access to it to question it and the authority on which it is based and gain the sense of freedom and excitement that it can offer".

They argue that facts alone do not constitute powerful knowledge. So how do we decide what powerful knowledge is? Young et al state that "the knowledge on which maths or history as GCSE subjects is based has a form of universality derived from two sources: (1) How mathematics has been developed by specialists in the universities, and (2) How school maths teachers select and sequence mathematics content in ways that their theory and experience tell them is appropriate for the majority of pupils at different ages."

> *Young et al talk of 'powerful knowledge' as a type of knowledge that 'allows those with access to it to question it and the authority on which it is based and gain the sense of freedom and excitement that it can offer'*

Meanwhile, back in the *Principled Curriculum* pamphlet (2013), Prof Wiliam sets out four purposes of education which you may find useful in terms of articulating the goals of your own curriculum. These four purposes are as follows:

1, Personal empowerment

Arguably the most important aim of education is to allow young people to take greater control of their own lives, perhaps best exemplified by the work of Paulo Freire. The idea is that rather than simply enculturating young people into the existing systems, education is the means by which people "deal critically and creatively with reality and discover how to participate in the transformation of their world" (*Pedagogy of the Oppressed*, Paulo Freire, 1968).

2, Cultural transmission

Another reason that is often given for educating young people is, in Matthew Arnold's words, to pass on from one generation to the next, "the best that has been thought and known in the world" (Arnold, 1869). Those who do not know what people are expected to know are regarded as ignorant – not stupid, but simply lacking the knowledge expected of them.

3, Preparation for citizenship

Democratic citizenship arguably works only if those who are voting understand the choices they are given, and education therefore has a vital role to play in preparing citizens so that they can make informed decisions about their participation in democratic society (Council of Europe, 2010).

4, Preparation for work

As a number of reports from the OECD have shown, more educated workers are more productive (e.g. Hanushek & Woessman, 2010). Educational achievement is therefore inextricably linked with economic prosperity.

Young et al (2014) say that the purpose of education "is to enable all students to acquire knowledge that takes them beyond their experience. It is knowledge which many will not have access to at home, among their friends, or in the communities in which they live. As such, access to this knowledge is the right of all pupils as future citizens".

They are therefore arguing that the purpose of education, and therefore the destination of our curriculum, is to achieve social justice and improve social mobility.

This is important in the UK when you consider that the academic achievement gap between rich and poor is detectable from an early age – as early as 22 months – and the gap continues to widen as children travel through the education system. Indeed, disadvantaged pupils fall two months further behind their peers each academic year and by the end of secondary school the gap is nearly 20 months (Sharples et al, 2011).

It is also important to note that the "powerful knowledge" that Young et al (2014) argue all pupils should be taught is distinct from the common-sense knowledge they gain through everyday experience. Rather, it is systematic in that it is based on concepts that are related to each other in groups we call disciplines rather than rooted in real-life experience, and is specialised in the sense that it is developed by experts in clearly defined subject groups who work in fields of enquiry with socially and historically fixed boundaries.

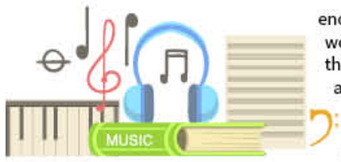
Step 3: Assess the starting points

Back with Google Maps, when answering the "where from?" question, there are two aspects to consider: the starting points of the taught curriculum and the starting points of the learnt curriculum.

The taught curriculum can be found in curriculum plans, assessment schedules and schemes of work, as well as in what teachers deliver in the classroom.

But we also need to understand what individual pupils have actually learnt, what they know and can do. In other words, we need to understand individual pupils' starting points and identify the gaps in their knowledge and skills.

This can be achieved in part by ensuring there is better data-sharing at the point of transition so that teachers of, say, year 6 do not only provide teachers of year 7 with the key stage 2 SATs results in the form of scaled scores, but also provide detailed information – in



each subject discipline – on what the pupil was capable of outside of test conditions and constraints, what they enjoyed and did not enjoy, what they could do and could not do, what motivated them and demotivated them, and what they mastered and what they have only tentatively grasped but require further reinforcement on, and so on and so forth.

But better data-sharing is still only half the battle won, we also need to assess as they begin their curriculum journey with us, and we need to continue to assess them as they travel through our curriculum.

One method of doing just this is to activate prior knowledge. For example, if I wanted my pupils early in year 7 to conduct some internet research into, say, Shakespeare's life story in order to inform their analysis of the authorial context for a study of *Macbeth*, I should not assume that they have conducted internet research before or that, even if they have, they can remember how to do it or will be able to transfer their prior experience of this skill (or procedural knowledge) into a new context or domain.

I need to activate their prior knowledge of this skill by asking them questions about what they have done before, what they remember of this, how they went about it, what decisions they had to make and what they had to think about.

By so doing, I can retrieve from long-term memory the procedural knowledge pupils have previously encoded and bring it into their working memories so they can think about it. Then, because activating prior knowledge is a form of retrieval practice, through repetition, we can begin to automate the decisions pupils have to make in order to free up space in their working memories for them to actively think about the context and task in hand.

> *Activating prior knowledge helps join-up the curriculum in pupils' minds because they can see how they use and expand the knowledge and skills they learnt previously as they progress through school*

Put simply, because pupils have done internet research before, they do not need to use as much of their limited working memory capacity to do it again as they would if performing the task for the very first time. If I had not taken time to activate their prior knowledge and instead had assumed all pupils were starting from scratch, they might not have made the link (and developed schema) and would have found the task harder.

Activating prior knowledge in this way also enables me to uncover and unpack any gaps in pupils' knowledge of internet research as well as any misconceptions they may have. I can then ensure all the class are on the same page and are following the same steps.

What is more, activating prior knowledge helps join-up the curriculum in pupils' minds because they can see how they use and expand the knowledge and skills they learnt previously as they progress through school, and this provides intrinsic motivation because they can see the purpose of what they learn and can begin to understand the usefulness of curriculum content.

Further, as pupils activate prior knowledge, they can add increasing complexity to it, progressively developing their knowledge and applying it to different contexts. Think of it like putting a Russian Doll inside a slightly bigger version of that doll, and then another and another, and so on.

In the example above, we might start with some basic rules of internet research such as how to use a search engine. Next, we might put that knowledge inside a slightly bigger doll by teaching the skills of using at least three sources and identifying trustworthy sources.

Next, we might add the skill of skimming and scanning webpages for key facts, etc. Each time, the doll gets bigger, but pupils are helped to make active connections between all the inter-related knowledge and skills they are learning, and as such create ever-more complex schema in long-term memory.

Step 4: Identify the way-points

Once you have set the destination and assessed the starting points of your curriculum, you must plot a course between the two. This course is what populates curriculum plans, assessment schedules, and schemes of work.

The shape of the path taken in each subject discipline will be different. Some curriculums are linear, following a neat line between the starting point and the destination as pupils build on prior knowledge and make progress. But many curriculums are neither linear nor neat. They may be spiral or helical in shape; they may zigzag.

But, irrespective of their shape, most subjects will find it useful to identify threshold concepts or way-points that provide a useful checkpoint on the way towards the destination.

Checkpoints have several advantages: first, they provide manageable and achievable stepping stones for pupils to aim for along the way, rather than setting pupils a goal they cannot hope to hit. Second, they provide a useful pitstop – a means of assessing, recognising and celebrating pupils' progress to date.

When these threshold concepts are used well, they can also become a means of assessment.

Let us consider how to identify threshold concepts or way-points before we look at ways to ensure these way-points provide for an increasingly complex curriculum.

Identifying threshold concepts

I will use as an example one possible end-point of the English curriculum: the concepts of "explicit and implicit meanings". As we return to these foundational concepts at increasingly complex levels, we could make use of "threshold assessments" which encourage pupils to move up the reading comprehension "ladder" from identifies to explains to analyses and, finally, to evaluates.

Or, more simply, we could write a sequence of "can-do" statements such as these:

- I can define the words explicit and implicit.
- I can identify an explicit and implicit meaning in a non-fiction text.
- I can identify both explicit and implicit meanings in a range of different text types.
- I can explain why a writer has implied rather than explicitly stated something.
- I can comment on the effect of both explicit and implicit meanings on the reader.
- I can analyse a writer's use of explicit and implicit meanings.

And so on... There are several advantages to this approach, including – in no particular order:

- The statements make sense to pupils – they are concrete not abstract, simple not lofty.
- Pupils can be assessed easily against each statement with a "yes/no".
- The assessment will inform us what each pupil knows and can do, and what they do not yet know and cannot yet do.
- The individual assessment outcomes can be aggregated to provide a percentage of "mastery" for any given cohort (e.g. 80 per cent of pupils in this class can define both explicit and implicit meanings).
- Both the individual and aggregated assessment outcomes can be used to inform our teaching, notifying us if we need to reteach or recap a concept or concepts, or if can we move on.
- Pupils' journeys through this hierarchy of statements can provide tangible evidence of progress – to pupils, parents and schools.
- The statements can also be used as learning objectives to provide a clear focus to a lesson or sequence of lessons which can be revisited in the plenary or used on an exit ticket.

Of course, as I have already admitted, learning is neither easy nor neat. Pupils do not often make linear progress and our curriculum is not often linear in shape. Rather, learning is messy; learners can go backwards as well as forwards, and not all assessments can be used to extrapolate progress over time because what is being assessed at various points through the year may be very different.

As such, "can-do" statements may work for some curriculum content in some subjects but may not – indeed, probably will not – work for everything. Sometimes, the key concepts and their various layers of accomplishment may take the form of questions, factual statements, key features, schools of thought, or exemplars.

A cognitive balancing act

The working memory is always trying to balance intrinsic cognitive load (the space in working memory dedicated to performing a task), germane cognitive load (the space in working memory dedicated to trying to understand the task), and extraneous cognitive load (the space in working memory dedicated to understanding and responding to the instructional context).

John Sweller (2011) suggests that in order to minimise extraneous cognitive load, instructional design (the way we teach the curriculum) should address the needs of three broad groups of expertise:

1 Novice level: "Detailed, direct instructional support ... preferably in integrated or dual-modality formats."

2 Intermediate level: "A mix of direct instruction and problem-solving practice with reduced support."

3 Advanced level: "Minimally guided problem-solving tasks ... provide cognitively optimal instructional methods."

As such, when identifying the way-points, we need to design a curriculum that affords sufficient repetition of content knowledge and which returns to prior learning with increasing complexity.

In year 7 we might begin by teaching our "novices" through detailed direct instruction and introduce new content knowledge at a basic – though not superficial – level. As pupils return to this learning in years 8 and 9, we might teach our "intermediates" through a combination of direct instruction and problem-solving activities. And then, at GCSE, we might teach the same content knowledge at an advanced level through minimally guided, problem-solving activities. In short, the way we teach the same content knowledge as pupils get older necessarily changes as pupils move from novices to experts. The scaffolds fall away, and pupils become increasingly independent.

> *Sometimes, the key concepts may take the form of questions, factual statements, key features, schools of thought, or exemplars*

But we also return to the content knowledge we taught previously and add ever more layers of meaning in order to develop schema.

In so doing, we encourage pupils to practise, not until they solve a problem correctly, but until they can no longer get it wrong.

Conclusion

By following these four steps – agreeing the vision, setting the destination, assessing the starting points and identifying the way-points – I think you will begin to plan an ambitious, broad, balanced, planned and sequenced curriculum to which all your pupils will have access. SecEd

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