PRIMARY SUBJECT LEADERS

Computing

Name: _____

School: _____

LA/Trust: _____

Date: _____

Hounslow Education Partnership

Computing:

Computing Subject Leaders (Sept 2021)

This workbook has been designed specifically to support the work of subject leaders in primary schools as they keep a record of both their actions and the outcomes of these actions.

This Computing Subject Leaders Workbook is the companion document to the Computing Subject Leaders Resource File.

There are subject leaders resource files & workbooks for the following subjects:

- Art & Design
- Computing
- English
- Design & Technology
- Geography
- History
- Mathematics
- MfL
- Music
- PE
- PSHE
- Science

The structure of each workbook follows the same format:

(***www** – what went well; **ebi** – even better if)

Computing:

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Part A: Subject leader audit questions

TASK	NOTES	COMPLETED	DATE
Am I clear about the NC Aims for Computing?			
Have I checked out the subject association website to identify resources for: * Me, as the subject leader * Teachers/assistants			
Have I completed an audit of my own knowledge, skills & understanding against these aims?			
Have I identified sources to support me in my own subject knowledge?			
Have I written a Statement of Intent for Computing?			
In writing the Statement of Intent, did I refer to paragraph 179 of Deep Dive Resource 1?			
Re: Para: 179, do I have a written response for each of the five bullet points?			
Has this statement been approved by HT/SLT/all staff?			
Have I developed a monitoring calendar so that I am able to build up an accurate and up-to-date overview of the www/ebi in Teaching, Learning & Assessment (TLA) for Computing?			

Computing:

Have I clarified with my line manager what good or better TLA in Computing 'looks' like? (and hence what is not yet 'good' enough)			
Supplementary questions:			
How long have I been the subject leader for Computing, and what support (CPD) have I received either internally or externally?			
What resources do I use to support me as a subject leader?			
How have I designed the Computing curriculum?			
What am I trying to achieve through the Computing curriculum?			
What scheme of learning does the school follow (published or your own)?			
How is this subject taught, and why?			
How do children progress in this subject from one year to the next? (Remember that progress is knowing more, remembering more and being able to do more.)			
How do I ensure that pupils retain their subject knowledge?			
How do I ensure that pupils with SEND (as well as those entitled to Pupil Premium) benefit from the curriculum in this subject?			

Computing:

What would I expect an inspector to see when they visit Computing lessons and speak to the pupils?			
How do teachers clarify any misconceptions by pupils?			
What links are made between Computing and other subjects – can I give an example of where this works particularly well?			
Can I tell of any examples where I have supported other teachers/assistants in Computing and the impact that this has had on their teaching/pupils' learning?			

Computing:

Part B: Snapshot www/ebi for Computing

THE KEY STRENGTHS IN:
Teaching, learning & assessment in Computing are:
The Computing curriculum are:

THE MAIN AREAS WE NEED TO DEVELOP IN:
Teaching, learning & assessment in Computing are:
The Computing curriculum are:

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Part C: Statement of curriculum intent

From the Ofsted Education Inspection Framework (EIF)

Intent

Para: 196.
In evaluating the school's educational intent, inspectors will primarily consider the curriculum leadership provided by school, subject and curriculum leaders.

Para: 197.
The judgement focuses on factors that both research and inspection evidence indicate contribute most strongly to an effective education and pupils achieve highly. These factors are listed below.

- The school's curriculum is rooted in the solid consensus of the school's leaders about the knowledge and skills that pupils need in order to take advantage of opportunities, responsibilities and experiences of later life. In this way, it can powerfully address social disadvantage.
- It is clear what end points the curriculum is building towards and what pupils need to know and be able to do to reach those end points.
- The school's curriculum is planned and sequenced so that new knowledge and skills build on what has been taught before and towards its clearly defined end points.
- The curriculum reflects the school's local context by addressing typical gaps in pupils' knowledge and skills.

Computing: Statement of Intent (School name):

Write your Statement of Intent here:

Hounslow Education Partnership

Part D: Computing & cultural capital

From the Ofsted Education Inspection Framework (EIF)

Cultural capital

Para: 203.
As part of making the judgement about the quality of education, inspectors will consider the extent to which schools are equipping pupils with the knowledge and cultural capital they need to succeed in life. Our understanding of 'knowledge and cultural capital' is derived from the following wording in the national curriculum:

'It (cultural capital) 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.'

How Computing at (School x) contributes to the development of pupils' cultural capital:

Part E: Subject leaders response to the Ofsted's May 2022, research report into Computing

https://www.gov.uk/government/publications/research-review-series-computing/research-review-series-computing

Introduction

Digital technology is driving extraordinary global changes that some are calling the Fourth Industrial Revolution. Navigating these changes effectively and safely requires a significant understanding of digital literacy, information technology and computer science. This knowledge is also crucial if business, industry and individuals are to exploit the opportunities offered by this revolution. The national curriculum makes it clear that computing is mandatory at key stages 1 to 4 and that 'a high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world'.

This review explores the literature relating to the field of computing education. Its purpose is to identify factors that can contribute to high-quality school computing curriculums, assessment, pedagogy and systems. We will use this understanding of subject quality to examine how computing is taught in England's schools. We will then publish a subject report to share what we have learned.

The purpose of this research review is set out more fully in the 'Principles behind Ofsted's research reviews and subject reports'.

Since there are a variety of ways that schools can construct and teach a high-quality computing curriculum, it is important to recognise that there is no single way of achieving high-quality computing education.
In this review, we have:

- outlined the national context in relation to computing
- summarised our review of research into factors that can affect the quality of education in computing
- considered curriculum progression in computing, pedagogy and assessment, and the impact of school leaders' decisions on provision

The review draws on a range of sources, including our 'Education inspection framework: overview of research', which sets out the 3 phases of our curriculum research. We hope that, through this work, we will contribute to raising the quality of computing education for all young people.

Reception and primary

Pupils' development of early computing knowledge is important. Grover, Pea and Cooper have suggested that:
"Learners' success in future engagement with computing will depend on how well introductory curricula prepare them in both the cognitive and affective dimensions of computational learning."

Computing is not part of the latest statutory framework for the early years foundation stage, but is part of the national curriculum from Year 1. Recently, there has been a debate on learning computing in the first years of schooling and the importance of getting it right. Several studies have demonstrated that young pupils are able to wrestle successfully with the core concepts of computing, including more technical subject content such as programming and robotics. That said, it is important that children experience teaching informed by expertise.

The national curriculum sets out the content that primary school pupils should learn in computing. A2017 report by the Royal Society identified that primary-age pupils typically have 1 hour a week of computing education; however, the research informing the report noted that this varies and there are a small number of primary schools where pupils receive no computing education at all. Three years after the new programmes of study for computing were introduced, the same research found that teachers saw computing as the 'future' and felt that there was a clear rationale for teaching the knowledge and skills required. Alongside these positive aspects it also found that Primary school teachers unfavourable to the new curriculum described the requirements as being too advanced for the available physical resources and budget, that staff lack the required skill-set and knowledge to teach the subject, and that the language used in the curriculum is overly-technical.

The research also highlighted that the main obstacle to teaching computing faced by teachers was a lack of technical subject knowledge. An international study from 2019 found that many primary school teachers were concerned about their own personal subject knowledge and the resources available to teach the intended curriculum.

Computing:

Curriculum

Based on the above, high-quality computing education may have the following features:

Ofsted guidance	My commentary
The planned curriculum includes a breadth of knowledge relating to computer science, information technology and digital literacy.	
Declarative knowledge ('knowing that') and procedural knowledge ('knowing how') are identified, sequenced and connected in the curriculum.	
Skilful use of technology is underpinned by procedural and declarative knowledge.	

Computer science

Based on the above, high-quality computing education may have the following features:

Ofsted guidance	My commentary
The curriculum is rich in computer science knowledge, enabling pupils to make sense of the entire computing curriculum.	
Pupils learn important programming knowledge to enable them to become skilful programmers.	
The curriculum sets out the knowledge pupils need to build a mental model of program execution.	
Programming languages are chosen to meet curriculum goals.	
Development of CT and problem-solving is underpinned by domain-specific knowledge that is identified and sequenced in the curriculum.	

Computing:

Information technology

Based on the above, high-quality computing education may have the following features:

Ofsted guidance	My commentary
The curriculum to teach pupils how to create digital artefacts is underpinned by specified declarative and procedural knowledge.	
Pupils' schemata of computing contexts is built through new and repeated encounters with contexts to build a breadth and depth of knowledge.	

Digital literacy

Based on the above, high-quality computing education may have the following features:

Ofsted guidance	My commentary
Teachers should not make assumptions about pupils' prior knowledge within digital literacy.	
Knowledge and skills are clearly identified to teach pupils how to use computing devices.	
The curriculum carefully sequences knowledge related to e-safety to ensure that subject content is appropriate for pupils at each stage of their education.	

Computing:

Curriculum sequencing

Based on the above, high-quality computing education may have the following features:

Ofsted guidance	My commentary
Facts and essential concepts are sequenced to enable pupils to develop expertise within the subject.	
Component declarative and procedural knowledge are identified and sequenced to enable pupils to be successful in learning complex ideas or processes.	
Decisions to teach the subject in a discrete or cross-curricular way are based on how best to teach the intended curriculum.	

Pedagogy

Based on the above, high-quality computing education may have the following features:

Ofsted guidance	My commentary
Teachers consider pupils' expertise and prior knowledge when selecting teaching approaches, with novices requiring more explicit instruction.	
The choice of teaching activities is strongly linked to the intended subject content and helps achieve curriculum goals.	
Teachers use worked examples appropriately to help pupils solve problems.	
Textbooks are used as a resource to support teaching in computing.	

Computing:

Assessment

Based on the above, high-quality computing education may have the following features:

Ofsted guidance	My commentary
Assessment focuses on the knowledge and skills identified in the curriculum and not generic competencies.	
Formative assessment is used to identify misconceptions early.	

Systems

Based on the above, high-quality computing education may have the following features:

Ofsted guidance	My commentary
Teachers have access to high-quality computing CPD to develop and maintain their subject knowledge.	
Leaders and teachers use the expertise of subject communities to develop teachers' subject knowledge.	
Adequate curriculum time is allocated to computing.	
Stakeholders work together to ensure that risks are weighed up and do not limit the ambition of the computing curriculum.	

Conclusion

This review has explored a range of evidence relating to high-quality computing education. It has drawn on research from many different countries and organisations. It also builds from the same research base that underpins the EIF.

Computing education is important for pupils to make sense of and to contribute positively to our technologically diverse world. This review has highlighted approaches to constructing, sequencing and teaching a coherent computing curriculum rich in computer science, information technology and digital literacy to achieve this aim and the aims set out in the national curriculum. Central to this is the importance of identifying and ordering the underlying knowledge that pupils require to make sense of complex ideas or engage in composite tasks or activities within the subject. Computing is rich in these ideas and tasks, so this is essential. To ensure that pupils can make progress through the curriculum, it is important that teachers check this knowledge so that pupils are ready for what comes next.

Computing lessons can place great demands on pupils' working memory. Teaching must work to manage this demand and ensure that pupils can think about the intended subject content. Due to the hierarchical nature of many aspects of computing subject knowledge, it is important that pupils' prior knowledge is taken into account when planning teaching and in the selection of teaching activities.

In this review, we have focused on the number of specialist staff in schools. The number of subject specialists in computing is low, and there is a lack of new teachers to improve the situation. This will have significant consequences for the quality of education that pupils receive in computing if nothing is done to remedy the situation. This further strengthens the argument for a focus on subject-specific CPD.

Part F: Annual monitoring calendar

1) Exemplar calendar
2) Your version
3) Checklist: groups
4) Annual overview
5) Evidence collected against NC Aims

Exemplar calendar

Month	Learning Observation	Pupil Voice * suggest doing this at the same time as 'pupil work'	Pupil Work	Any Other Activity
September	xxx	week 3/4: talk to pupils about experiences in subject last year	if new to post, search out pupils' work from previous year to get an overview of learning against the subject's NC Aims	meet with teachers to clarify 'understanding' of NC Aims/expectations for end of topic 'goals'
October	learning walk in EY/KS1/L & U KS2 (eg – visits to YN, Y2, 4 & 6)	talk to pupils* in those classes you've visited	* always try to talk to pupils with 'samples' of their learning with them	always feedback the www/ebi from any monitoring/review activities
November	learning observations in EY/KS1/L & U KS2 (eg – a selection of YR, 1, 3 & 5)	talk to pupils* in those classes you've visited	* always try to talk to pupils with 'samples' of their learning with them	always feedback the www/ebi from any monitoring/review activities
December	xxx			Gather feedback from teachers from Term 1 (re: www/ebi) Prepare termly update of www/ebis *(for feeding back to HT/SLT – and possibly linked Governing Body (GB) representative)*
January	xxx	talk to pupils about experiences in subject last term		meet with teachers to clarify 'understanding' of NC Aims/expectations for end of topic 'goals'

Computing:

February	learning walk in EY/ KS1/L & U KS2 (eg – visits to YR, Y1, 3 & 5) (*check whether the www/ebis from term 1 are the same/improving …)*	talk to pupils* in those classes you've visited	* always try to talk to pupils with 'samples' of their learning with them	
March	learning observations in EY/KS1/L & U KS2 (eg – a selection of YN, 2, 4 & 6) (*check whether the www/ebis from term 1 are the same/improving …)*	talk to pupils* in those classes you've visited	* always try to talk to pupils with 'samples' of their learning with them	
April				Gather feedback from teachers from term 2 (re: www/ebi) Prepare termly update of www/ebis
May	follow-up learning observations/walks to assess whether the wwws are still wwws and whether any ebis have moved in the direction of a www	talk to pupils* in those classes you've visited	* always try to talk to pupils with 'samples' of their learning with them	
June	follow-up learning observations/walks to assess whether the wwws are still wwws and whether any ebis have moved in the direction of a www	talk to pupils* in those classes you've visited	* always try to talk to pupils with 'samples' of their learning with them	Gather feedback from teachers from terms 1-3 (re: www/ebi)
July				Gather feedback from teachers from terms 1-3 (re: www/ebi) Complete subject self-evaluation report/action plan for the next academic year *(share with HT/SLT – and possibly also linked GB representative)*

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Your version

Month	Learning Observation	Pupil Voice * suggest doing this at the same time as 'pupil work'	Pupil Work	Any Other Activity
September				
October				
November				
December				

Computing:

January				
February				
March				

Computing:

April				
May				
June				
July				

Computing:

Computing:

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Checklist: Have I included as many as possible of the following 'groups' of pupils?

Group	When	Who
EYFS		
KS1		
KS2 (Lower)		
KS2 (Upper)		
Lower/Middle/Upper Ability pupils		
Disadvantaged/Non-disadvantaged pupils		
Pupils with SEND		
EAL pupils		
(What other 'groups' do you need to focus on?)		

Computing:

Annual overview

Month	Learning Observation	Pupil Voice	Pupil Work	Any Other Activity
September				
October				
November				
December				
January				
February				
March				
April				
May				
June				
July				

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Evidence collected against NC Aims

NC Aims	Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation/can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems	Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems	Are responsible, competent, confident and creative users of information and communication technology
Yr N www			
Yr N ebi			
Yr R www			
Yr R ebi			
Yr 1 www			
Yr 1 ebi			
Yr 2 www			
Yr 2 ebi			
Yr 3 www			
Yr 3 ebi			
Yr 4 www			
Yr 4 ebi			
Yr 5 www			

Computing:

Yr 5 ebi			
Yr 6 www			
Yr 6 ebi			

Monitoring Calendar B (Summary)

Yr N			
Yr R			
Yr 1			
Yr 2			
Yr 3			
Yr 4			
Yr 5			
Yr 6			

Computing:

Overall Summary

NC Aims	Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation/can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems	Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems	Are responsible, competent, confident and creative users of information and communication technology
www			
ebi			

Part G: Computing: Quality of Education (exemplar)

This is the author's initial interpretation of a best-fit between the previous subject criteria and the current (2021) Quality of Education (QoE) criteria. (See Subject Leaders Resource File for this information).

INTENT		
NEW HANDBOOK	**EVIDENCE**	**OLD SUBJECT CRITERIA**
Leaders adopt or construct a curriculum that is ambitious and designed to give all pupils, particularly disadvantaged pupils and including pupils with SEND, the knowledge and cultural capital they need to succeed in life. This is either the national curriculum or a curriculum of comparable breadth and ambition. [If this is not yet fully the case, it is clear from leaders' actions that they are in the process of bringing this about.]		Leaders are well informed by current developments in the subject. There is a shared common purpose amongst those involved in teaching the subject, with good opportunities to share practice and access subject training. The Computing curriculum is broad, balanced and well informed by current initiatives in the subject. It matches well the needs of the large majority of pupils and ensures effective continuity and progression in their learning in the subject. All areas of the curriculum receive good coverage for all pupils, in Computing lessons or across the school curriculum.
The school's curriculum is coherently planned and sequenced towards cumulatively sufficient knowledge and skills for future learning and employment. [If this is not yet fully the case, it is clear from leaders' actions that they are in the process of bringing this about.]		Pupils benefit from opportunities to use their Computing knowledge, skills and understanding in realistic and challenging situations. Links with other subjects in the school are productive in strengthening pupils' learning in Computing. Students in key stages 4 and 5 have access to appropriate Computing qualifications.
The curriculum is successfully adapted, designed or developed to be ambitious and meet the needs of		

pupils with SEND, developing their knowledge, skills and abilities to apply what they know and can do with increasing fluency and independence. [If this is not yet fully the case, it is clear from leaders' actions that they are in the process of bringing this about.]		

Computing:

IMPLEMENTATION		
NEW HANDBOOK	**EVIDENCE**	**OLD SUBJECT CRITERIA**
Teachers have good knowledge of the subject(s) and courses they teach. Leaders provide effective support for those teaching outside their main areas of expertise.		Teachers have a good level of specialist expertise, including good technical skills, which along with accurate assessment of individual pupils' prior knowledge and understanding, is used well in planning and teaching their subject. Continuing professional development is targeted, includes training for teaching assistants and technical support staff, and is evaluated for its impact.
Teachers present subject matter clearly, promoting appropriate discussion about the subject matter being taught. They check pupils' understanding systematically, identify misconceptions accurately and provide clear, direct feedback. In so doing, they respond and adapt their teaching as necessary without unnecessarily elaborate or individualised approaches.		Teachers of Computing communicate high expectations about their subject to pupils, encouraging them to produce the best work they can. Teachers respond well to pupils' questions through effective dialogue and feedback, and correct errors and misconceptions accurately and effectively.
Over the course of study, teaching is designed to help pupils to remember long term the content they have been taught and to integrate new knowledge into larger ideas.		Pupils understand the value of Computing, its impact on society and how it relates to their lives, due to teachers using a range of appropriate contexts in lessons. Good learning across all aspects of the subject is promoted through the use of an appropriate range of resources and teaching strategies.
Teachers and leaders use assessment well, for example to help pupils embed and use knowledge fluently, or to check understanding and inform teaching. Leaders understand the limitations of		Teachers respond well to pupils' questions through effective dialogue and feedback, and correct errors and misconceptions accurately and effectively.

assessment and do not use it in a way that creates unnecessary burdens on staff or pupils.		
Teachers create an environment that focuses on pupils. The textbooks and other teaching materials that teachers select – in a way that does not create unnecessary workload for staff – reflect the school's ambitious intentions for the course of study. These materials clearly support the intent of a coherently planned curriculum, sequenced towards cumulatively sufficient knowledge and skills for future learning and employment.		Pupils understand the value of Computing, its impact on society and how it relates to their lives, due to teachers using a range of appropriate contexts in lessons.
The work given to pupils is demanding and matches the aims of the curriculum in being coherently planned and sequenced towards cumulatively sufficient knowledge.		Teachers of Computing communicate high expectations about their subject to pupils, encouraging them to produce the best work they can.
Reading is prioritised to allow pupils to access the full curriculum offer.		
A rigorous and sequential approach to the reading curriculum develops pupils' fluency, confidence and enjoyment in reading. At all stages, reading attainment is assessed and gaps are addressed quickly and effectively for all pupils. Reading books connect closely to the phonics knowledge pupils are taught when they are learning to read.		
The sharp focus on ensuring that younger children gain phonics knowledge and language comprehension necessary to read, and the skills to		

communicate, gives them the foundations for future learning.		
Teachers ensure that their own speaking, listening, writing and reading of English support pupils in developing their language and vocabulary well.		

Computing:

IMPACT		
NEW HANDBOOK	**EVIDENCE**	**OLD SUBJECT CRITERIA**
Pupils develop detailed knowledge and skills across the curriculum and, as a result, achieve well. This is reflected in results from national tests and examinations that meet government expectations, or in the qualifications obtained.		Pupils make good progress across all areas of the subject and show originality, imagination and creativity in their work. They understand important concepts in Computing and make connections within the subject. Pupils use their subject knowledge and understanding effectively in written and verbal explanations and can solve challenging problems.
Pupils are ready for the next stage of education, employment or training. They have the knowledge and skills they need and, where relevant, they gain qualifications that allow them to go on to destinations that meet their interests and aspirations and the intention of their course of study. Pupils with SEND achieve the best possible outcomes.		Pupils make good use of a wide range of hardware and software appropriate to their age and ability. Pupils are able to work independently when given the opportunity, taking the initiative in their work and when working with others. Pupils take the initiative in, for example, asking questions, carrying out their own investigations, and working constructively with others. Pupils enjoy using Computing and can explain its value.
Pupils' work across the curriculum is of good quality.		Pupils make good progress across all areas of the subject and show originality, imagination and creativity in their work. They understand important concepts in Computing and make connections within the subject.
Pupils read widely and often, with fluency and comprehension appropriate to their age. They are able to apply mathematical knowledge, concepts and procedures appropriately for their age.		Computing makes a good contribution to whole-school priorities, including literacy and numeracy policies.

Part H: CPD Log

1) CPD I have attended
2) CPD I have delivered

CPD I have attended

Date	Title	Provider	Actions

Computing:

CPD I have delivered

Date	Title	Who to	Impact/feedback

Computing:

Part I: Subject leader development plan

Subject: _____

Subject Leader: _____

Academic year: _____

Date	Target	Record of actions taken	Impact/evaluation	Target achieved (& date)
Autumn Term				
Spring Term				
Summer Term				
End of year summary				