**Primary Curriculum Map (Computing)**

***PGCE***

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| **University Curriculum**  |
| **Session Sequence** | **Session Content Subject Specific Components/s** | **Learn That****(ITTECF reference in numerics e.g. 1.1)** | **Learn How****(ITTECF reference bullets alphabetically e.g. 1c)** | **Links to Research and Reading** | **Formative Assessment mode** |
| **Session 1** **Seminar** **2 hours**  **Primary Computing: What are algorithms and why should we care?**  Creative approaches:Group work, practical, tinkering activity, discussion. | * To know that all computers share the elements of Input- Process – Storage – Output
* To understand key concepts of computational thinking
* To understand algorithm design in KS1
* To be able to convert from algorithms to programming a digital device
* To understand and apply tinkering pedagogy
 | 2.4; 3.4; 3.5;  5.2;  6.1 8.2  | 1c;  2e; 2f;  3e; 3f; 3g; 3t;  4b; 4f  6e; 6f; 6g  | THE ROYAL SOCIETY 2017: After the reboot: computing education in UK schools <https://royalsociety.org/-/media/policy/projects/computing-education/computing-education-report.pdf>WILLINGHAM, D., 2021. Why don’t students like school? A cognitive scientist answers questions about how the mind works and what it means for the classroom. 2nd ed. New Jersey, USA: Jossey-Bass  Sentance, S., Waite, J. and Kallia, M., 2019. *Teaching computer programming with PRIMM: a sociocultural perspective* Computer Science Education, v. 29 Doi: [10.1080/08993408.2019.1608781](http://doi.org/10.1080/08993408.2019.1608781)  Ofsted, 2023. Research review series: Computing. HMSO.  Bagge, P and Grover, S. Chapter 22 Variables In: Grover, S. (ed), 2020, Computer science in K-12: an A to Z handbook on teaching programming. Edfinity: USA.  Franks, R., 2021. A journey into physical computing. *Hello World* <https://helloworld.raspberrypi.org/articles/hw15-a-journey-into-physical-computing>   Various articles in Hello World June 2022 Sustainability & Computing: How can technology be good for the planet? <https://helloworld.raspberrypi.org/issues/19>   Kalelioglu, F. and Sentance, S., 2019 “Teaching with Physical Computing in School: The Case of the Micro:bit,” *Education and Information Technologies*, 25(4), pp. 2577–2603. doi: 10.1007/s10639-019-10080-8.    | Participate in group/ class discussions, activities and Q&A   Complete sample programming tasks (tutor observation)  Work collaboratively on computing projects (tutor observation)Complete an end of phase computing test (online formative test   |
| **Session 2** **Seminar** **2 hours**  **Physical computing - BBC Microbits**Application of concepts at keystage 2 – sequence, selection, repetition, varaiables  Creative approaches:Paired programming, practical, tinkering activity, discussion. | * To understand the role of physical computing
* To be able to discuss pros and cons of physical computing
* To be able to apply programming concepts to physical computing
* To be able to select appropriate online resources

  | 2.7; 2.8; 3.3; 4.2; 4.3; 4.4; 4.5; 4.8; 4.9; 4.10; 5.5; 5.7   | 1c;  2h;  3a; 3e; 3h, 3j; 4b;  4e; 4l;  6g; 6o;  8f   |
| **Session 3**Seminar **2 hours** **Second star to the right and straight on ‘til morning**     | * To understand the importance of explicit vocabulary teaching in primary computing
* To understand the use of cross-curricular creative technology in the wider curriculum
* To understand that cross curricular teaching should draw upon computing curriculum objectives
* To be able to consider contexts for IT strand work
* To understand pedagogical content knowledge for teaching stop-frame animation
* To be able to evaluate planning from a published scheme
* To understand the use of progression frameworks
* To be able to apply approaches to collaborative project making
 | 1.2; 1.5; 1.72.1;2.23.1; 3.2; 3.124.4; 4.75.9 | 1b, 1c, 1g2e; 2f3a; 3b; 3c; 3n4f; 4m5p |

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| **School Based Curriculum – I**nitial Phase |
| **Observing:** Observe how expert colleagues use and deconstruct approaches, in in computing, in at least one lesson throughout school.**Planning:** Observe how expert colleagues break tasks down into constituent components, in computing, for at least one lesson.**Teaching:** Rehearse and refine particular approaches in in computing for a group/whole class. Deliver group/whole class teaching.**Assessment:** Check prior knowledge and understanding during lessons.**Subject Knowledge:** Discuss and analyse subject specific components with expert colleagues |
| **Subject Specific Components/s (know, understand, can do)** | **Learn That****(ITTECF reference in numerics e.g. 1.1)** | **Learn How****ITTECF reference bullets alphabetically e.g. 1c)** | **Links to Research and Reading** | **Formative Assessment** |
| To know how to scaffold learning in a Computing lesson using subject specific pedagogies, such as PRIMM, tinkering, Parson’s problems, paired programming/ collaborative working by observing or discussing with the subject leader (or recommended colleague) To understand how the class teacher uses positive behaviour management strategies as they teach a practical subject through either: * Discussing with the subject leader for computing how these strategies can be used in a computing lesson; or
* Observing positive behaviour management in a computing lesson. Take note of how the room is set up prior to the lesson, regular routines (including packing up), when and where directions are provided and how equipment is managed.

To understand how to plan a computing lesson and ensure progress for all, through either discussing or co-planning with the subject leader or other experienced colleague     |  4.4; 4.9; 4.10; 5.5; 7.1; 7.4  |  4a; 4b; 4l; 5n; 7d; 7e; 7h; 7i; 7j  |  Various articles in Hello World magazine <https://helloworld.raspberrypi.org/> Issue 21 focuses specifically on Primary teaching <https://helloworld.raspberrypi.org/issues/21>   Resources from Raspberry Pi Foundation <https://www.raspberrypi.org/research>   Resources from Computing at School <https://www.computingatschool.org.uk/>  National Centre for Computing Education resources <https://teachcomputing.org/>, including Promoting effective computing pedagogy <https://teachcomputing.org/pedagogy>     | WDS Observations Regular discussion and feedback from mentor/ class teacher  |

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| **School Based Curriculum – D**evelopmental Phase |
| **Observing:** Observe how expert colleagues use and deconstruct approaches in computing in at least 4 lessons throughout school.**Planning:** Observe how expert colleagues break tasks down into constituent components over a sequence of lessons.Plan, as appropriate, for a sequence of lessons in computing lessons. Plan, as appropriate, how computing activities and skills are through other subject/curriculum areas. **Teaching:** Rehearse and refine particular approaches in English lessons. **Assessment:** Draw conclusions about what pupils have learnt by looking at patterns of performance over a number of assessments with support and scaffolding from expert colleagues**Subject Knowledge:** Discuss and analyse subject specific components with expert colleagues |
| **Subject Specific Components/s (know, understand, can do)** | **Learn That****(ITTECF reference in numerics e.g. 1.1)** | **Learn How****(ITTECF reference bullets alphabetically e.g. 1c)** | **Links to Research and Reading** | **Formative Assessment** |
| Review knowledge from initial phase and complete any incomplete tasks. It is worth reviewing these in a new context.  Then develop and build on this by -     To understanding the sequence of planning, teaching and assessment in computing by either:   •planning, teaching and assessing a sequence of lessons for Computing based on the school’s medium-term plans; or    • annotating a medium-term plan from school and discussing with a member of staff how you might use this to plan a sequence of lessons for Computing, including planning for additional adults and adapting teaching and learning for SEND and EAL learners.   To know that schools use varied approaches to assessing children in Computing and that pupils’ progression can be assessed using the guidance in the Teacher’s Guide from NCCE (https://teachcomputing.org/curriculum/key-stage-1), the Computing at School’s progression pathways document (https://community.computingatschool.org.uk/resources/1692/single), code-it progression grid (http://code-it.co.uk/assessment-progression/) or other appropriate resources.    To understand that while there are no nationally recognised progression frameworks for Computing in England, know that the progression is monitored through the intended school’s curriculum.    |  *4.4; 4.9; 4.10; 5.5; 7.1; 7.4*              3.1; 3.3; 3.4; 3.5; 4.1; 4.2; 4.8; 5.1; 5.2; 5.3; 5.7; 6.1; 6.4    |  *4a; 4b; 4l; 5n; 7d; 7e; 7h; 7i; 7j*                2a; 2c; 2d; 2g; 2i; 2j; 2k; 3a; 3c; 3d; 3e; 3f; 3j; 3l; 4b; 4d; 4e; 4n; 5a; 5g; 5o; 6a; 6e; 6g   |  Various articles in Hello World magazine <https://helloworld.raspberrypi.org/> Issue 21 focuses specifically on Primary teaching <https://helloworld.raspberrypi.org/issues/21>   Resources from Raspberry Pi Foundation <https://www.raspberrypi.org/research>   Resources from Computing at School <https://www.computingatschool.org.uk/>  National Centre for Computing Education resources <https://teachcomputing.org/>, including Promoting effective computing pedagogy <https://teachcomputing.org/pedagogy>     | WDS  Observations  Regular discussion and feedback from mentor/ class teacher  |

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| **School Based Curriculum – Consolidation Phase** |
| **Observing:** Observe how expert colleagues use and deconstruct approaches, in computing in a sequence of lessons throughout school.**Planning:** Plan a sequence of lessons in computing and identify other opportunities for developing these skills in other Areas of Learning.**Teaching:** Rehearse and refine particular approaches in all computing lessons. **Assessment:** Discuss with expert colleagues’ summative assessment, reporting and how data is used.**Subject Knowledge:** Discuss and analyse subject specific components with expert colleagues |
| **Subject Specific Components/s (know, understand, can do)** | **Learn That****(ITTECF reference in numerics e.g. 1.1)** | **Learn How****(ITTECF reference bullets alphabetically e.g. 1c)** | **Links to Research and Reading** | **Formative Assessment** |
| Review knowledge from Initial and Developmental Phases and complete any remaining tasks. Then develop and build on this:       To Understand that progression across the year groups should be across the three strands of computing (computer science, information technology and digital literacy)    To know that planning small step progression in Computing takes account of pupils with SEND from the outset   To understand how the policies for Computing are used to safeguard children online, both at home and at school   To know how subject leaders check the quality of education in computing To understand how to monitor and assess progress in computing against the school’s curriculum plan. This might be through a sequence of lessons being taught by the trainee, or by reviewing children’ work from previous computing lessons.    |  *4.4; 4.9; 4.10; 5.5; 7.1; 7.4*              *3.1; 3.3; 3.4; 3.5; 4.1; 4.2; 4.8; 5.1; 5.2; 5.3; 5.7; 6.1; 6.4*      1.3; 5.7; 6.1; 6.2; 8.6  |  *4a; 4b; 4l; 5n; 7d; 7e; 7h; 7i; 7j*               *2a; 2c; 2d; 2g; 2i; 2j; 2k; 3a; 3c; 3d; 3e; 3f; 3j; 3l; 4b; 4d; 4e; 4n; 5a; 5g; 5o; 6a; 6e; 6g*      1h; 5b; 5c; 5e; 5j; 5o; 6c; 6d; 6l; 6n; 8b; 8h; 8n   |  Various articles in Hello World magazine <https://helloworld.raspberrypi.org/> Issue 21 focuses specifically on Primary teaching <https://helloworld.raspberrypi.org/issues/21>   Resources from Raspberry Pi Foundation <https://www.raspberrypi.org/research>   Resources from Computing at School <https://www.computingatschool.org.uk/>  National Centre for Computing Education resources <https://teachcomputing.org/> including Promoting effective computing pedagogy <https://teachcomputing.org/pedagogy>     |  WDS Observations Regular discussion and feedback from mentor/ class teacher  |