**Primary Curriculum Map (Computing)**

***Year 1 Undergraduate 2024/25***

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| **University Curriculum – Year 1** | | | | | |
| **Session Sequence**  **Include details of creative** | **Session Content**  **Subject Specific Components** | **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** |
| **Seminar 1**    **What are algorithms and why should we care?** | * To know the 3 strands/pillars of progression (IT/CS/DL) and understand their implications for teaching and learning in computing. * To understand the picture of computing education in UK primary schools * To know of the differences between ICT and Computing * To understand the sequence, algorithms & Computational Thinking as foundational elements of the curriculum. * To know that all computers have the common elements of Input- Process – Storage – Output * To understand how algorithms can be implemented as programs on a digital device * To know and be able to apply ‘tinkering’ pedagogy understanding the relationship between ‘discovery’ learning and determinism. | 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>  Raspberry Pi Foundation:  The big book of computing pedagogy  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.  Elleman, A. M., Lindo, E. J., Morphy, P., & Compton, D. L. (2009) The Impact of Vocabulary Instruction on Passage-Level Comprehension of School-Age Children: A 36 Meta-Analysis. Journal of Research on Education al Effectiveness, 2(1), 1–44. Available at: <https://doi.org/10.1080/19345740802539200>  Barefoot Computing resources:   * Network Hunt * Modelling the Internet * Ranking Search Activity * Selecting Search Activity | Check your knowledge quiz  Interactive survey  Tutor led discussion  Sharing of portfolios  Group & Class discussion |
| **Seminar 2**  **Seminar**    *Dancing, noise monitors and gaming: controlling the world around us* | * To know that the programming concepts **sequence, selection, repetition** are key elements of the curriculum (KS2) * To be able to apply pedagogical approaches for teaching programming (e.g. PRIMM,Use-Modify-Create, Parson’s problems) * To understand programming concepts through modification of existing projects. * To be able to identify **sequence, selection, repetition** in block based programs. | 1.2;  2.4; 2.7;  4.3; 4.4; 4.8; 4.10; 5.5;  7.1  8.2 | 1c;  2b; 2h;  3a; 3e; 3h;  4b; 4e;  6g;  7a;  8g; |
| **Seminar 3**  *Making Games More Interesting* | * To understand the function of **variables** as a key element of the curriculum (KS2) * To be able to use variables in games * To be able to modify an existing block-based code project * To be able to evaluate third-party resources * To understand the progression through the computer science (CS) strand | 1.3;  2. 7;  3.3;  4.2; 4.3; 4.4; 4.8;  5.1  8.2 | 1c;  2a; 2d;  3a; 3h; 3j;  4n;  5a; 5i;  8f; 8g |
| **Seminar 4**  **Microbits** | * 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 |
| **Seminar 5**  **What is the Internet?** | * To understand the influence of prior knowledge and misconceptions on pupil learning * To understand the relation between online safety and the computing curriculum * To know that the internet is a ‘network of networks’ * To know the history of distributed packet networks (ARPA, DARPA nets) * To understand how data is sent in packets | 2.2;  3.2; 3.4; 3.5;  4.3  5.3 | 3a; 3e; 3f; 3g;  4.b; 4.f;  5h |
| **Seminar 6**  **Digital creativity** | * 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; 1.7  2.1;2.2  3.1; 3.2; 3.12  4.4; 4.7  5.9 | 1b, 1c, 1g  2e; 2f  3a; 3b; 3c; 3n  4f; 4m  5p |

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| **School Based Curriculum – Year 1** | | | | |
| **Observing:**  Observe how expert colleagues plan for the needs of all learners while maintaining high expectations, providing targeted support and promote an inclusive and equitable learning environment.  **Planning:**  Observe how expert colleagues adapt content, approaches, and environments to support all learners especially those with an additional need, for at least one lesson.  **Teaching:**  Rehearse and refine approaches to adaptive teaching to meet the needs of all learners. Deliver group/whole class teaching.  **Assessment:**  Rehearse and refine how to adapt assessment to enable and support children to demonstrate what they know, remember, and understand using a range of assessment strategies.  **Subject Knowledge:**  Demonstrate the ability to work within the key legislation and policies that underpin adaptive teaching and inclusive practice for all children including those with Special Educational Needs/Disability.Discuss and analyse 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 Understand how the class teacher uses positive behaviour management strategies as they teach a practical subject .    To know how these strategies can be used in a computing lesson.  To understand the importance of positive behaviour management in a computing lesson.  To understand the importance of how the room is set up prior to the lesson.  To understand the importance regular routines (including packing up), when and where directions are provided and how equipment is managed.    To know how to scaffold learning in a Computing lesson using subject specific pedagogies.    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). | 1.1, 1.2, 1.5, 1.6, 1.7  2.10  3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.12  4.2, 4.3, 4.4, 4.6, 4.7, 4.8  5.1, 5.2, 5.3, 5.4, 5.6, 5.7, 5.8, 5.9  6.1, 6.2, 6.3, 6.4, 6.5, 6.6  7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8  8.2 | 1c; 1e; 1f; 1g; 1h  2a; 2b  3a; 3b; 3c; 3d  4a; 4b; 4l;  5i; 5o;  6a; 6d; 6f  7d; 7e; 7h; 7i; 7j  8c; 8g | 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> | Reflection:  Consider session one baseline confidence – how has this developed over time?  What went well?  What could have gone better?  What would you change next time?  Which theory can you draw on to justify these reflections?  Subject specific observation form and feedback. |

***Year 2 Undergraduate***

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| **University Curriculum – Year 2** | | | | | |
| **Overview of Content** | | | | | |
| **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** |
| **Seminar 1** |  |  |  | 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.    LINDA, M., TEEMU, L., MERJA, B., & MARJAANA, V., 2023. 'Student and teacher co-agency when combining CT with arts and design in a cross-curricular project', *Computers and Education Open*. 4. <https://doi.org/10.1016/j.caeo.2023.100132>    ASHCRAFT, C., EGER, E. K. AND SCOTT, K. A., 2017. 'Becoming Technosocial Change Agents: Intersectionality and Culturally Responsive Pedagogies As Vital Resources for Increasing Girls' Participation in Computing,' *Anthropology & Education Quarterly*, 48(3), pp. 233–251.    Ofsted, 2023. *Research review series: Computing.* HMSO. |  |
| **Seminar 2** |  |  |  |
| **Seminar 3** |  |  |  |
| **Seminar 4** |  |  |  |

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| **School Based Curriculum – Year 2** | | | | |
| **Observing:** Observe how expert colleagues use distributed and spaced learning in at least 4 lessons throughout school.  Observe how expert practitioners use motivation and build self-esteem of all learners.  **Planning:** Plan for opportunities to increase cultural capital.  Plan for the effective use of additional adults  Discuss with expert practitioners how they embed adaptive approaches into planning.  With the support of expert practitioners, capture and incorporate the voice of the child for example through a one-page profile.  **Teaching:** Rehearse and refine chunking, scaffolding, and fading in lesson planning over a sequence of lessons. Plan, teach and evaluate a series of lessons incorporating adaptive approaches to enable all children to access a rich curriculum.  **Assessment:** Use peer and self-assessment to aid and support independent learning.  **Subject Knowledge:**  Discuss and analyse with expert practitioners how to implement and review flexible groupings and use groupings to support learning and promote inclusion. | | | | |
| **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** |
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***Year 3 Undergraduate***

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| **University Curriculum – Year 3** | | | | | |
| **Overview of Content** | | | | | |
| **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** |
| **Seminar 1** |  |  |  |  |  |
| **Seminar 2** |  |  |  |
| **Seminar 3** |  |  |  |

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| **School Based Curriculum – Year 3** | | | | |
| **Observing:** Observe how expert colleagues identify and implement reasonable adjustments for children with identified Special Educational Needs  **Planning:**  Work closely with other teachers, SENco and members of the staff team to implement reasonable adjustments within and beyond the classroom.  Plan for children who may need adaptations beyond the classroom to support their social inclusion.  **Teaching:**  Observe and implement reasonable adjustments for children with identified special Educational Needs and Disability  **Assessment:** Discuss with expert colleagues’ summative assessment, reporting and how data is used.  **Subject Knowledge:**  Acknowledge and identify when their own social, emotional and mental health needs to be supported.  Identify and access sources of support for their own wellbeing where appropriate. | | | | |
| **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** |
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