**Primary Early Years 3-7 Curriculum Map: Understanding the World: The Natural World/Science**

***Post Graduate Programme***

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| **University Curriculum** |
| **Session Sequence** | **Session Content Subject Specific Components/s** | **Learn That****(****CCF reference in numerics e.g., 1.1)** | **Learn How****(CCF reference bullets alphabetically e.g., 1c)** | **Links to Research and Reading** | **Formative Assessment mode** |
| **Induction week session****1hr****‘Bucket School’ experience.** | To begin to know that Learning Outside the Classroom is an integral part of the curriculum for Understanding the World: The Natural World and Science, and has benefits linked to theory and research.To begin to know that outdoor learning is an essential part of Early Years provision and can support working memory and long-term memory.To begin to identify opportunities for Learning Outside the Classroom both through adult-led activities and child-led opportunities.To begin to understand the importance of risk assessment and of managing risk inside and outside the classroom.To begin to understand the need for inclusive practice when learning outside the classroom and begin to consider how to adapt outdoor learning to meet the needs of all pupils, including those with SEND (Special Educational Needs and Disabilities) and EAL (English as an Additional Language). | **2.1****4.2****5.2; 5.3; 5.4; 5.7****8.2; 8.3** | **2g****3a****5a; 5b; 5e****8a; 8b** | Wilkinson, D. and Stallard, W. (2020) *Mastery in primary science.*Chapter 5 'Science in Early Years Settings'. London: Learning Matters, an imprint of SAGE Publications.Sharp, J. et al. (2021) *Primary science: teaching theory and practice.* Chapter 5 'Science in the Foundation Stage' ninth edition. London: Learning Matters Stead, D. and Kelly, L. (eds) (2015) *Inspiring science in the early years: exploring good practice.*Chapter 1 ‘Is Science important in the early years?’. Maidenhead, Berkshire: Open University Press. Phenice, L.A and Griffore, R.J. (2003) *Contemporary Issues in Early Childhood*. ‘Young Children and the Natural World.’ Volume 4 Issue 2. | Tutor questioning.Peer discussions and focused tasks. |
| **Session 1** **1hr 30mins****as part of ‘Understanding the World’ sessions.** | To develop knowledge and understanding of the requirements for teaching, learning and assessment in relation to ‘Understanding the World: The Natural World’ as part of the Statutory Framework for the Early Years Foundation Stage, and the Characteristics of Effective Learning.To develop knowledge and understanding of the non-statutory guidance to support teaching and learning in ‘Understanding the World: The Natural World,’ namely Development Matters and Birth to Five Matters.To recognise the importance of having good science subject knowledge and explore how an understanding of early science concepts and scientific skills are developed within the early years, through adult-led activities and through well-planned continuous provision and enhancements.To develop knowledge of pedagogical approaches that support high quality teaching such as an understanding of misconceptions, effective questioning, and high-quality classroom talk.To begin to use subject and curriculum knowledge to plan teaching and learning experiences for Nursery and Reception aged pupils, demonstrating an understanding of the need to adapt these to satisfy the needs of all learners, e.g., children with SEND and EAL. | **1.1; 1.5****2.1; 2.2; 2.3; 2.4; 2.6****3.1; 3.2; 3.3; 3.5; 3.6; 3.7; 3.10****4.2; 4.3; 4,4; 4.6; 4.7; 4.9****5.1; 5.2; 5.3; 5.7****6.1** | **1a; 1b; 1c; 1d****2a; 2b; 2c; 2d; 2e; 2f; 2g; 2h****3a; 3c; 3d; 3g; 3n; 3u****4a; 4b; 4c; 4f; 4j; 4k; 4m; 4o****5a; 5b; 5e; 5l****6a; 6f****8a; 8d** | *Statutory Framework for the Early Years Foundation Stage.* 2021. Department for Education.*Development Matters.* Updated 2021. Department for Education.*Birth to Five Matters.* 2021. Early Education.*Primary Science: Knowledge and Understanding.* 2021. Peacock, Sharp, Johnsey, Wright and Sewell.*Primary Science: Theory and Practice.* 2021. Sharp, Peacock, Johnsey, Simon, Smith, Cross, and Harris.*Putting the* *EYFS Curriculum into Practice.* 2023. Grenier and Vollans.*The Early Years Foundation Stage: Theory and Practice.* 2021. 4th Edition. Palaiologou. *Maintaining Curiosity.* 2013. Ofsted.*Research Review: Science.* 2021. Ofsted.*Finding the Optimum: The Science Subject Report.* 2023. Ofsted.*The National Curriculum - Science Programmes of Study: Key Stages 1 and 2.* 2013. Department for Education.*ASE: Guide to Primary Science.* 2018. Serret and Earle.*Teaching Science to pupils with SEND: Using an evidence-based approach*. 2020. Watkins, R. Apansionok, M. and Neil, J. Available from: [(PDF) Teaching science to pupils with SEND: using an evidence-based approach (researchgate.net)](https://www.researchgate.net/publication/345503100_Teaching_science_to_pupils_with_SEND_using_an_evidence-based_approach) ASE (Association for Science Education) materials. STEM learning centre materials.PSST (Primary Science Teaching Trust) materials. PLAN primary science. | Initial confidence and subject knowledge audit.Tutor questioning.In session peer discussions and focused tasks.Portfolio Reflections. |
| **Session 2** **1hr 30mins****National Curriculum: KS1** | To develop knowledge of the aims and purpose of the Science curriculum through exploration of the National Curriculum Programmes of Study.To consider the OFSTED Science Review and Finding the Optimum: The Science Subject Report.To begin to identify and develop both substantive and disciplinary knowledge of the Science National Curriculum and make connections to the EYFS and KS2 (Key Stage 2).To begin to understand the importance of research informed practice when teaching Science.To begin to understand how children learn in science, including cognitive development and working memory, and strategies to support learning, including those pupils with SEND and EAL.To identify common misconceptions in science and develop ideas in how to address these with pupils. | **1.1; 1.2; 1.6****2.1; 2.2; 2.4****3.1; 3.2; 3.3; 3.5; 3.6****4.2; 4.3; 4.4; 4.6; 4.7****5.1; 5.2; 5.3; 5.7****6.1; 6.3; 6.4; 6.5; 6.7****8.2** | **1b; 1d****2a; 2d; 2e; 2f; 2g****3a; 3c; 3d; 3e; 3f; 3j****4a; 4g****5a; 5b; 5c; 5d; 5e; 5g****6a; 6c 6d; 6e; 6f; 6g; 6h; 6j****8a; 8b; 8e; 8f; 8g** |
| **Session 3****1hr 30mins****National Curriculum: KS1** | To develop knowledge and understanding if working scientifically through the exploration of enquiry skills and approaches.To continue to develop knowledge and understanding of the importance of Learning Outside the Classroom (LOtC) when teaching Science, based on research, including:* considering the benefits to pupils, including SEND (Special Educational Needs and Disabilities) and EAL (English as an Additional Language) children; opportunities within the curriculum;
* identifying connections to ‘working scientifically;’
* understanding the importance of health and safety/risk assessment, and behaviour management.

To explore the National Curriculum and begin to develop a secure subject and curriculum knowledge around the following Programmes of Study – Plants, Seasonal Changes, Living Things and their Habitats – and identify opportunities for Learning Outside the Classroom. |
| **Session 4****1hr 30mins****National Curriculum: KS1** | To develop knowledge and understanding as to what high-quality science planning (long term, medium term, and short term) consists of, including the need to:* build on prior learning;
* show progression in knowledge, skills, and vocabulary;
* make connections to substantive and disciplinary knowledge;
* identify and address common misconceptions;
* adopt different pedagogical approaches to teach science effectively;
* adapt teaching to ensure progress for all children, including those with SEND and EAL, Pupil Premium and those who require challenge.

To explore the National Curriculum and continue to develop a secure subject and curriculum knowledge around the following Programme of Study – Animals including Humans, to teach with confidence. |
| **Session 5****1hr 30mins****National Curriculum: KS1** | To develop knowledge and understanding as to what assessment in science (both formative and summative) consists of, including efficient strategies such as questioning, retrieval and feedback, and end of key stage assessments and exemplifications.To explore the National Curriculum and continue to develop a secure subject and curriculum knowledge around the following Programme of Study – Materials, to teach with confidence. |
| **Session 6****1hr 30mins****EYFS** | To reflect on the teaching of science to date and identify areas for CPD (Continuing Professional Development).To continue to develop knowledge and understanding of the holistic nature of Understanding the World: The Natural World in the EYFS.To understand the importance of developing an enabling environment in the EYFS which supports the Characteristics of Effective Learning and provides opportunities for children to develop their knowledge of early scientific concepts, through learning both indoors and outside the classroom. Consider what this might look like in practice.To consolidate knowledge and understanding that planning and teaching in Understanding the World: The Natural World must build on prior learning and understanding, while considering the progression to National Curriculum science.To continue to develop an understanding that planning and teaching must be adapted to meet the needs of all learners such as providing targeted support e.g., for children with special educational needs or disabilities (SEND) and English as an additional language (EAL) with teacher and TA (Teaching assistant) support.To have a knowledge of the ELGs (Early Learning Goals) for Understanding the World: The Natural World which helps to identify the expected level of development for children by the end of Reception through assessment of children's progress. | **1.1;****2.1; 2.2; 2.6;****3.1; 3.2; 3.3; 3.4; 3.7;** **4.1; 4.6;****5.3; 5.7****6.1;** **8.1; 8.2; 8.3; 8.7** | **2a; 2c; 2d; 2e** **3a; 3c; 3d; 3f; 3u****4a; 4l; 4m; 4o****5a; 5b; 5e****8a; 8e; 8f; 8g** |

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| **School Based Curriculum – Introductory Phase** |
| **Observing:** Observe how expert colleagues use and deconstruct approaches, in this subject, in at least one lesson throughout school.**Planning:** Observe how expert colleagues break tasks down into constituent components, in this subject, for at least one lesson.**Teaching:** Rehearse and refine particular approaches in this subject 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****(CCF reference in numerics e.g., 1.1)** | **Learn How****(CCF reference bullets alphabetically e.g., 1c)** | **Links to Research and Reading** | **Formative Assessment** |
| To observe and understand how settings support children’s development in understanding the world around them, and how children’s individual learning needs are planned for through a combination of effective adult-led learning experiences and continuous provision, using a range of starting points for example, children’s interests, stories, and themes. To use the setting’s plans and key resources to plan and teach learning experiences for children, both adult-led and through enhancements in the indoor and outdoor provision and based on an understanding of how children’s learning of early science concepts develops, effective pedagogical approaches and adaptive teaching.   To work with colleagues to develop efficient approaches to assessment and draw conclusions about children’s learning and development in Understanding the World: The Natural World.    To understand the importance of ensuring strong subject knowledge in Understanding the World: The Natural World to recognise early science concepts, and to impact on children’s learning and deliver high-quality teaching.  | **2.3; 2.4****3.2****4.2; 4.6** **5.1; 5.2; 5.3; 5.4****6.1** | **1a; 1b; 1c; 1d****2a; 2b; 2c; 2d; 2g; 2h****3a; 3c; 3d; 3g; 3n****4a; 4b; 4c; 4f; 4k****5a; 5b; 5e****6a** | *Statutory Framework for the Early Years Foundation Stage.* 2021. Department for Education.*Development Matters.* Updated 2021. Department for Education.*Birth to Five Matters.* 2021. Early Education.*Primary Science: Knowledge and Understanding.* 2021. Peacock, Sharp, Johnsey, Wright and Sewell.*Primary Science: Theory and Practice.* 2021. Sharp, Peacock, Johnsey, Simon, Smith, Cross, and Harris.*Putting the EYFS Curriculum into Practice.* 2023. Grenier and Vollans.*The Early Years Foundation Stage: Theory and Practice.* 2021. 4th Edition. Palaiologou. *Maintaining Curiosity.* 2013. Ofsted.*Research Review: Science.* 2021. Ofsted.*Finding the Optimum: The Science Subject Report.* 2023. Ofsted.*ASE: Guide to Primary Science.* 2018. Serret and Earle.  ASE materials. STEM learning centre materials.PSST (Primary Science Teaching Trust) materials. PLAN primary science. | Weekly Development Summary – subject specific comments. Lesson Observations – subject specific feedback. Mentor/Link Tutor. Reflections in blue book. Progress Report. |

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| **School Based Curriculum – Development Phase** |
| **Observing:** Observe how expert colleagues use and deconstruct approaches, in this subject, in at least one lesson 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 all core and selected foundation subjects. Plan, as appropriate, one lesson / group activity in all remaining subjects.**Teaching:** Rehearse and refine particular approaches in all core and selected foundation subjects. **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****(CCF reference in numerics e.g., 1.1)** | **Learn How****(CCF reference bullets alphabetically e.g., 1c)** | **Links to Research and Reading** | **Formative Assessment** |
| To observe expert practitioners teaching science and specifically reflect on how they adapt lessons for the needs of all pupils, address misconceptions, make appropriate use of enquiry based approaches, and develop children’s motivation and self-esteem in the science.  To use the school’s curriculum plans to plan and deliver (or observe) a science lesson that builds on children’s prior learning and promotes key scientific vocabulary, chunking content so as not to overload working memory and avoid cognitive overload, whilst making adaptations to meet the needs of pupils.   To use school’s medium-term plans and/or science scheme to devise a series of science lessons that address substantive and disciplinary knowledge whilst building on children’s prior learning.  To organise the classroom to ensure safety during practical science lessons.  To show an understanding that retrieval practice is vital to ensure that children know more and remember more, and that they can demonstrate progression in knowledge and skills.    To engage in discussion with school colleagues (mentor, class teacher or subject lead), about the importance of ongoing formative assessment of pupils’ understanding to understand children’s learning needs and begin to develop knowledge about the varied approaches to assessing children in the science. To understand that a good level of subject knowledge is needed to plan and teach lessons and identify targets for continuing professional development within science.  To discuss with the science subject leader their key role in monitoring the quality of education provision in the subject.  Discuss: * progression across the year groups
* planning small step progression in science to take account of pupils with additional needs
* how subject policies are used
* how they monitor the quality of teaching and learning in science.

  To review with an experienced member of staff key documentation, policies and practice for risk assessment and planning for learning outside the classroom, including educational visits and how these are used to enhance the science curriculum and contribute to the cultural capital of children. | **2.2; 2.3; 2.4; 2.6; 2.7; 2.8****3.1; 3.2; 3.4; 3.7****4.2;****5.2; 5.3; 5.5** **7.1; 7.2** | **2a; 2c; 2d; 2e; 2f; 2g; 2h****3a; 3c; 3d 3g****4b; 4e****5b; 5e****6d****7a** | As above. | Weekly Development Summary – subject specific comments. Lesson Observations – subject specific feedback.  Mentor/Link Tutor. Reflections in blue book. Progress Report. |

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| **School Based Curriculum – Consolidation Phase** |
| **Observing:** Observe how expert colleagues use and deconstruct approaches, in this subject, in at least one lesson throughout school.**Planning:** Plan a sequence of lessons in all core and foundation subjects.**Teaching:** Rehearse and refine particular approaches in all core and selected foundation subjects. **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****(CCF reference in numerics e.g., 1.1)** | **Learn How****(CCF reference bullets alphabetically e.g., 1c)** | **Links to Research and Reading** | **Formative Assessment** |
| To know the importance of ensuring strong subject knowledge in Understanding the World: The Natural World to recognise early concepts in science, to ensure high-quality teaching and impact children’s learning. To know how to make informed decisions about planning, teaching and assessment in Understanding the World: The Natural World for the phase in which they are teaching, based on the appropriate level of subject knowledge to support children’s early scientific development through adult-led activities using relevant policy and research, the statutory and non-statutory curriculum guidance.  To know how to develop the learning environment, both indoors and outdoors, to embed practical opportunities for the development of early scientific knowledge and understanding, drawing on appropriate resources.  To know how to plan and teach for effective learning in Understanding the World: The Natural World by carefully sequencing learning to best facilitate transferal to long term memory.  To be able to adapt teaching and plan for the needs of all learners within the setting, making appropriate use of additional adults. To use subject and curriculum knowledge to plan and teach lessons in Understanding the World: The Natural World which use appropriate knowledge, skills, and techniques to facilitate progress, drawing on children’s prior learning, addressing misconceptions, sequencing learning, and integrating formative assessment.  To take a holistic approach to planning for Understanding the World: The Natural World learning in an enabling environment, critically evaluating a school’s provision with a view to ensuring coverage and progression in knowledge of concepts, skills, and vocabulary. To use observations and interactions to recognise children’s early scientific development, making accurate assessments against the ELG (Early Learning Goals) for Understanding the World: The Natural World.  To identify targets for continuing professional development within science. | **2.1; 2,2; 2,4; 2.7; 2,8****3.1;3.2; 3.3; 3.5****4.2; 4.3; 4.4; 4.6; 4.7****5.1; 5.3; 5.4; 5.5; 5.7****8.5** | **2a; 2c; 2d; 2e****3a; 3c; 3d; 3f****4a; 4f; 4g****5a; 5b; 5l****6a; 6d; 6e; 6f; 6g; 6h; 6j** | As above. | Weekly Development Summary – subject specific comments. Lesson Observations – subject specific feedback. Mentor/Link Tutor. Reflections in blue book. Progress Report.Viva. |