**Primary Early Years (3-7 phase) Initial Teacher Education: Curriculum Plan**

**Subject/Strand: Understanding the World: The Natural World and Science Postgraduate Programme**

**Links to Practical knowledge, Substantive/theory, Disciplinary**

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| **Curriculum Vision:**  **Through our Initial Teacher Education Curriculum, it is our intention that all Edge Hill Primary (3-7 phase) teacher trainees will:**   * *have secure science subject and curriculum knowledge so that they can teach in the primary age range (specifically across the 3 - 7 age range) with confidence* * *understand that science is the route to developing both an understanding of the world around them and the skills to become a logical problem solver* * *develop confidence and promote an enthusiasm and passion for science in the classroom* * *have a secure understanding of early years and primary science pedagogy (specifically aged 3 – 7 years), and for practical, first-hand experience to be the predominant approach they use in their own classrooms both through adult-led and child-initiated play* * *believe that all children can be successful in science, regardless of social background (or other circumstances) and that this is their moral purpose as educator.* | | | | | | | | | |
| **Phase 1** | | | | | | | | | |
| **University Based Learning** | | | | | **School/Practical Based Learning – Introductory** | | | | |
|  | **Learn That** | **Learn How** | | | **Learn That** | | | **Learn How** |  |
| **Component Knowledge** | * ‘Understanding the World: The Natural World’ (UtW: TNW) is one of the specific areas of learning in the Early Years Foundation Stage (EYFS) Statutory Framework and has Early Learning Goals (ELGs) at the end of Reception which specifies the requirements for learning and development   **LT 3.1, LT 3.3** | * UtW: TNW enables children to make sense of their physical world and supports making connections to their everyday lives.   **LH 3.1, LH 3.3** | | |  | | | * UtW: TNW is integrated as a specific area into the curriculum.   **LH 3.3** | **Intent** |
| * The EYFS curriculum is underpinned by the Characteristics of Effective Learning (CoEL) and this should be reflected in children’s engagement in UtW: TNW   **LT 1.1, LT 1.5, LT 2.1 LT 3.6** | * The CoEL supports children’s learning and development through UtW: TNW   **LH 1.1, LH1.2, LH 1.3, LH 1.4, LH 3.14** | | |  | | | * UtW:TNW and the CoEL are integrated into provision   **LH 1.1, LH1.2, LH 1.3, LH 1.4, LH 3.14** |
| * There is non-statutory curriculum guidance for UtW:TNW for example Development Matters (DfE, 2021) and Birth to Five Matters (Early Education, 2021)   **LT 3.1, LT 3.5, LH 3.7** | * Non-statutory curriculum guidance can support sequencing learning and development in UtW:TNW   **LH 2.4 LH 3.1** | | |  | | | * The school’s curriculum materials shape teaching and learning in UtW: TNW   **LH 3.3** |
| * Foundational knowledge of early scientific concepts are built primarily through UtW: TNW and this is where children begin their formal science education   **LT 2.2, LT 3.2, LT 4.2** | * To recognise essential early scientific concepts, knowledge, and skills   **LH 3.1, LH 3.4, LH 4.1** | | |  | | |  |
| * Strong subject knowledge in early science is required to teach UtW:TNW   **LT 3.2** | * To develop subject knowledge in early science using available resources   **LH 3.1, LH 8.1, LH 8.4** | | | * Subject knowledge is essential to inform planning, teaching and assessing in UTW:TNW   **LT 3.2** | | | * To use subject knowledge effectively to plan, teach, assess and evaluate an adult-led activity   **LH 2.1, LH 2.2, LH 2.3, LH 3.1, LH 3.4** |
| * Learning in UtW:TNW takes place through explicit teaching in adult-led focused activities through scaffolding and modelling and through well-planned continuous provision   **LT 3.5, LT 4.2, LT 4.3, LT 4.4, LT 4.9** | * Recognise that young children will learn through expert adult support to scaffold, model and guide combined with opportunities in play through continuous provision to promote inquiry and problem solve   **LH 4.1, LH 4.2, LH 4.3, LH 4.10** | | |  | | | * An experienced teacher uses direct instruction to support children to develop early scientific concepts in UtW:TNW   **LH 4.1, LH 4.2, LH 4.3, LH 4.11** |
| * Observing children in continuous provision supports and develops learning in UtW: TNW by enabling prior learning to be identified and misconceptions to be anticipated and addressed   **LT 2.2, LT 2.6, LT 4.4, LT 5.2** | * Through observation of children supports identifying children’s prior knowledge and anticipating and addressing children’s misconceptions which are usually based on their experience   **LH 2.1, LH 2.5, LH 2.6** | | |  | | | * An experienced teacher uses the observation, planning and assessment cycle to support children to develop early scientific concepts in UtW:TNW   **LH 4.1, LH 4.2, LH 4.3, LH 4.11** |
| * Effective teaching and learning for UtW:TNW for adult-led and continuous provision activities requires planning and teaching to 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)   **LT 5.3, LT 5.7** | * To plan, through story, for adult-led activities and continuous provision for UtW: TNW reflecting that it can be adapted to meet the needs of all learners   **LH 5.1, LH 5.2** | | | * Their planning and teaching of UtW:TNW needs to be adapted to the specific learners within their school-based placement (by discussing the cohort’s needs) to ensure their individual progress with mentor support initially   **LT 4.2, LT 5.2, LT 5.3, LT 5.4** | | | * To adapt adult-led activities and continuous provision in UtW: TNW to be inclusive for all learners with initial support from the mentor   **LH 5.2, LH 5.5** |
| * High quality classroom talk can support children to articulate key ideas, consolidate understanding and extend their vocabulary of the natural world     **LT 3.10, LT 4.7** | * To provide rich contexts to enrich and widen children’s scientific and non-scientific vocabulary as the beginnings of scientific concepts   **LH 3.21, LH 4.13, LH 4.15** | | |  | | |  |
| * Effective questioning is essential to check prior knowledge, assess and scaffold learning for early scientific concepts in UTW: TNW   **LT 4.6, LT 5.1, LT 6.1** | * Effective questioning supports identifying prior-learning and scaffolding children’s knowledge and understanding to support scientific exploration of the natural world   **LH 5.12, LH 6.6, LH 4.15** | | | * A teacher’s use of questioning can ascertain prior knowledge, further learning and assess children’s knowledge and understanding in UtW:TNW   **LT 4.6, LT 5.1, LT 6.1** | | | * With initial mentor support, use effective questioning to ascertain prior knowledge, further learning and support assessment UtW:TNW   **LT 4.6, LT 5.1, LT 6.1** |
| * Memory is a key factor in learning and working memory is where information in UtW:TNW is being actively processed and knowing that memory is a key factor in learning is essential   **LT 2.3, LT 2.4** |  | | | * A teacher carefully sequences teaching to support memory   **LT 2.3, LT 2.4** | | | * With support from the mentor, begin to sequence teaching to reflect a developing understanding of how memory affects learning     **LT 2.3, LT 2.4, LT 2.7, LT 2.8, LT 3.7, LT 4.2** |
| * Learning Outside the Classroom (LOtC) is an integral part of the curriculum for UtW: TNW and has benefits linked to research and theory   **LT 2.1, LT 8.2** | * To identify opportunities for LOtC through adult-led and child-led learning provision and other opportunities such as Forest School for UtW:TNW   **LH 8.1** | | | * Outdoor learning is an essential part of provision that can support working memory and long-term memory   **LH 2.3, LH 2.4, LH 2.5** | | | * To engage in outdoor learning through provision and/or adult led learning to identify and develop early science concepts   **LH 2.7, LH 3.1** |
| * Health and Safety and risk assessment are essential in maintaining a safe outdoor learning environment   **LT 8.3** | * To evaluate outdoor provision to complete a risk assessment   **LH 8.2** | | |  | | |  |
| **Assessment** | **Assessment: University Based Learning** | | | **Assessment: School Based Learning** | | | | |  |
| Formative assessment approaches:   * Initial confidence and subject knowledge audit * Tutor questioning * Peer discussions and peer focused tasks – plan for adult-led learning and provision using a story * Subject Progress reviews - PebblePad portfolio reflections | | | Assessed throughout Professional Practice 1: Introductory   * Weekly Development Summary – assessing progress on a weekly basis focusing on key strands of the EHU curriculum which includes discussion focus tasks * Lesson observations – subject specific feedback * Progress report * Reflections in blue book including child observation | | | | | **Impact** |
| **Composite Knowledge** | **Composite knowledge/understanding/skills** | | | | | | | |
| *By the end of this phase trainees will* ***know:*** | | *By the end of this phase trainees will* ***understand:*** | | | *By the end of this phase trainees will* ***be able to:*** | | |
| * That UtW: TNW in the EYFS curriculum supports children’s development of the physical sense of the world around them * Some key features of planning, teaching and assessing in UtW:TNW | | * That UtW:TNW involves learning and teaching of early science concepts * Some different pedagogical approaches that can be used to support learning in UtW:TNW and how to adapt teaching to enable all children to make good progress | | | * Plan a quality UTW:TNW adult led activity and an aspect in continuous provision with the support of tutors, peers and a mentor that considers prior learning, adaptive teaching, subject-specific pedagogy and assessment | | |
| **Research** | **KEY RESEARCH****That trainees will know that informs teaching and learning in Science** | | | | | | | | |
| * Primary Science Knowledge & Understanding, 2021 Peacock, Sharp, Johnsey, Write and Sewell * Primary Science Theory & Practice 2021 Sharp, Peacock, Johnsey, Simon, Smith, Cross and Harris * Research Review: Science 2021 Ofsted * The Teaching of Science in Primary Schools 2017 Harlen and Qualter * Maintaining Curiosity 2013 Ofsted * ASE: Guide to Primary Science 2018 Serret and Earle * ASE materials * STEM learning centre materials * PSST materials * PLAN primary science * Early Years Foundation Stage Statutory Framework 2021 DfE * Development Matters 2021 DfE * Birth to Five Matters 2021 Early Education | | | | | | | | |
| **Phase 2** | | | | | | | | | |
| **University Based Learning** | | | | | | | | | |
|  | **Learn That** | | | | **Learn How** | | | |  |
| **Component Knowledge** | * The National Curriculum (NC) (2014) Programme of Study (PoS) for science builds on the EYFS curriculum for UtW: TNW   **LT 3.1. LT 3.3** | | | | * Science knowledge, skills and understanding progresses from the UtW:TNW to the NC   **LH 3.1, LH 3.3, LH 3.4** | | | | **Intent** |
| * The science NC provides a programme of study for the knowledge (physics, chemistry and biology) and skills (working scientifically) which children learn aged 5-11 and that the spiral structure provides a minimum requirement and enables progression of substantive and disciplinary knowledge   **LT 3.1, LT 4.2** | | | | * The science NC makes clear the expectations for outcomes for each PoS   **LH 3.1, LH 3.3** | | | |
| * That secure subject knowledge in science is essential for high-quality teaching and learning for the PoS of Plants, Seasonal Change, Animals including humans, Living Things and their Habitats, Everyday Materials and Uses of Everyday Materials     **LT 3.2** | | | | * To use available resources to develop and deepen their own subject knowledge and associated vocabulary for the PoS Plants, Seasonal Change, Animals including humans, Living Things and their Habitats and Materials and take ownership of this process   **LH 8.2** | | | |
| * Expertise in science is built through developing two forms of knowledge:   Substantive - Scientific knowledge and conceptual understanding  Disciplinary - Working scientifically  **LT 3.2, LT 8.2** | | | | * Both substantive and disciplinary knowledge are developed in the PoS   **LH 3.4, LH 3.5** | | | |
| * Working scientifically is embedded within the NC and should be taught explicitly and carefully sequenced alongside the substantive content   **LT 3.1, LT 3.2** | | | | * To identify appropriate disciplinary knowledge to be taught through substantive content   **LH 3.1, LH 3.5, LH 3.9, LH 3.10** | | | |
| * The importance of science in everyday life and that science capital can contribute to a child’s engagement and relationship with the subject     **LT 1.1, LT 1.2, LT 1.6** | | | | * To develop the teaching of science capital to widen children’s understanding of what science is and how it relates to their lives and promotes aspirations   **LH 1. 2, LH 1.4** | | | |
| * Good practice in science is based on evidence and research   **LT 8.2** | | | | * Research and evidence informs teaching and learning in science such as the use of learning theories and the OFSTED Research Review Series: Science (2021)     **LH 5.5, LH 8.1** | | | |
| * Eliciting children’s ideas about science concepts, knowledge and skills is essential to ascertain prior knowledge and identify misconceptions     **LT 2.2, LT 2.6, LT 3.4** | | | | * There are a range of pedagogical approaches to elicit children’s prior knowledge, skills, ideas and misconceptions   **LH 2.1, LH 2.5, LH 2.6, LH 3.7, LH 6.4** | | | |
| * Learning in science needs to be sequenced carefully to facilitate transferral to the long-term memory and this is supported by children learning new ideas by linking those ideas to existing knowledge and organising information (schemata), repeated practice, supporting retrieval and avoiding overloading working memory   **LT 2.3, LT 2.4, LT 2.7, LT 2.8, LT 3.7, LT 4.2** | | | | * Children learn in terms of cognitive development and how that impacts on children’s progress which is supported by relevant research and theory to shape classroom practice   **LH 2.2, LH 2.3, LH 2.7, LH 2.10, LH 3.10, LH 4.5** | | | |
| * Inclusive approaches in science will support all learners   **LT5.3, LT 5.7** | | | | * Adapting practice in science supports different learners such as SEND and EAL as well as providing challenge   **LH 2.11, LH 5.1, LH 5.2, LH 5.8** | | | |
| * Learning Outside the Classroom (LOtC) is an integral part of NC science where many PoS can be taught and also supports closing the attainment gap and mental health   **LT 1.1** | | | | * To identify opportunities for LOtC when planning and teaching NC science such as Bucket School and Forest School and recognise the importance of LOtC   **LH 8.4** | | | |
| * Behaviour management, health and safety and risk assessment are necessary for practical science sessions, outdoor learning experiences and visits and trips   **LT 7.1, LT 7.2** | | | | * Make use of risk assessment procedures to ensure children are kept safe at all times such as predicting a range of risk indicators and taking remedial action to reduce the risk of harm   **LH 7.4, LH 7.5** | | | |
|  | * Formative assessment in science provides information about children’s knowledge and skills     **LT 6.1** | | | | * Formative assessment in science informs teaching and learning and strategies include prior-learning, questioning and identifying misconceptions     **LH 6.1, LH 6.5** | | | |  |
| **Phase 2** | | | | | | | | | |
| **School/Practical based learning - Developmental** | | | | | | | | | |
|  | **Learn That** | | | **Learn How** | | | | |  |
| **Component Knowledge** | * A school’s EYFS UtW:TNW/NC science curriculum is sequenced carefully and progressively to develop knowledge, skills and values   **LT 3.1, LT 4.2** | | | * The school’s curriculum materials shape teaching and learning in science   **LH 3.3, LH 4.5** | | | | | **Intent** |
| * A secure level of subject knowledge is needed for the EYFS/NC PoS being planned for and taught to impact on children’s learning   **LT 3.2** | | | * To plan UtW:TNW or science lesson/s using their developed science subject knowledge by identifying essential concepts, knowledge and skills   **LH 3.1** | | | | |
| * Substantive and disciplinary knowledge are incorporated into specific lesson plans   **LT 3.2** | | | * To combine substantive and disciplinary knowledge within a science lesson with mentor support   **LH 3.3** | | | | |
| * When planning and teaching EYFS UtW:TNW/NC science, time is built in for prior knowledge to be ascertained to support teachers to identify and address misconceptions   **LT 2.2, LT 2.6, LT 3.4** | | | * To plan and teach EYFS UtW:TNW/NC science lesson/s that elicit children’s prior knowledge, skills, ideas and misconceptions   **LH 2.1, LH 2.5, LH 2.6, LH 3.7, LH 6.4** | | | | |
| * EYFS UtW:TNW/NC science planning and teaching needs to be adapted to the specific learners within their school-based placement (by discussing the cohort’s needs) to ensure their individual progress with mentor support initially   **LT 4.2, LT 5.2, LT 5.3, LH 5.5** | | | * To adapt EYFS UtW: TNW/NC science planning and teaching to be inclusive for all learners with initial support from the mentor   **LH 5.2, LH 5.5** | | | | |
| * A teacher carefully sequences teaching to support schemata, repeated practice, retrieval and avoiding overloading working memory   **LT 2.3, LT 2.4, LT 2.7, LT 2.8, LT 3.7, LT 4.2** | | | * With support from the mentor, begin to sequence teaching to reflect a developing understanding of how memory affects learning     **LT 2.3, LT 2.4, LT 2.7, LT 2.8, LT 3.7, LT 4.2** | | | | |
| * LOtC for EYFS UtW:TNW/NC science is built into the curriculum and schools have a behaviour policy and approach to managing risks for outdoor learning, practical experiences and trips   **LT 3.1, LT 7.1, LT 7.2** | | | * If appropriate, to plan and teach EYFS UtW:TNW/NC science through LOtC to support learning and progress in the concept, knowledge or skills being taught With support from a mentor, recognise how to manage risk by applying the school’s behaviour policy, risk assessment and health and safety measures to LOtC and practical science sessions   **LH 3.3, LH 3.4, LH 7.1** | | | | |
| **Assessment** | **Assessment: University Based Learning** | | | **Assessment: School Based Learning** | | | | | **Impact** |
| Formative assessment approaches:   * Subject audit * Tutor questioning * Peer discussions and focused tasks * Recall quizzes * Subject Progress reviews - PebblePad portfolio reflections | | | Assessed throughout Professional Practice 2: Developmental   * Weekly Development Summary – assessing progress on a weekly basis focusing on key strands of the EHU curriculum which includes discussion focus tasks * Lesson observations – subject specific feedback * Progress reports * Reflections in blue book | | | | |
| **Composite Knowledge** | **Composite knowledge/understanding/skills** | | | | | | | |
| *By the end of this phase trainees will* ***know:*** | | *By the end of this phase trainees will* ***understand:*** | | | *By the end of this phase trainees will* ***be able to:*** | | |
| * Key substantive and disciplinary knowledge and pedagogical approaches required to support learning and teaching of science in Key Stage One * Features of effective planning, teaching and learning of EYFS UtW:TNW/NC science such as questioning, addressing misconceptions and widening vocabulary | | * The different pedagogical approaches that can be used to support learning in EYFS UtW:TNW/NC science and how they can be adapted to enable all children to make good progress. * How to adapt teaching to meet the needs of all children within any classroom as well as providing stretch and challenge | | | * Plan and teach quality EYFS UtW:TNW/NC science lesson/s, with initial support from a mentor, that integrates working scientifically and considers prior learning, adaptive teaching, misconceptions and subject specific pedagogy | | |
| **Research** | **KEY RESEARCH****That Trainees will know that informs teaching and learning in Science** | | | | | | | | |
| * Primary Science Knowledge & Understanding, 2021 Peacock, Sharp, Johnsey, Write and Sewell * Primary Science Theory & Practice 2021 Sharp, Peacock, Johnsey, Simon, Smith, Cross and Harris * Research Review: Science 2021 Ofsted * The Teaching of Science in Primary Schools 2017 Harlen and Qualter * Maintaining Curiosity 2013 Ofsted * ASE: Guide to Primary Science, 2018 Serret and Earle * ASE materials * STEM learning centre materials * PSST materials * PLAN primary science * National Curriculum 2014 DfE * Early Years Foundation Stage Statutory Framework 2021 DfE * Development Matters 2021 DfE * Birth to Five Matters 2021 Early Education | | | | | | | | |
| **Phase 3** | | | | | | | | | |
| **University Based Learning** | | | | | | | | | |
|  | **Learn That** | | | | **Learn How** | | | |  |
| **Component Knowledge** | * Secure subject, pedagogical and curriculum knowledge is essential to teach EYFS UtW:TNW/NC science   **LT 2.1, LT 3.2** | | | | * To deepen subject knowledge using key research and resources and take ownership of this process   **LH 8.2** | | | | **Intent** |
| * Research and evidence-based practice is essential to inform high-quality teaching and learning   **LT 8.2** | | | | * Use research and evidence-based practice to make informed decisions for planning, teaching and learning primary science such as the use of learning theories and the OFSTED Research Review Series: Science (2021)   **LH 5.5, LH 8.1** | | | |
| * In high quality EYFS and NC science curriculums knowledge is carefully sequenced to build on prior learning and connect substantive and disciplinary knowledge   **LT 2.1, LT 2.2, LT 3.3** | | | | * Key concepts, knowledge and skills are carefully sequenced to build on prior learning and reveal the interplay between substantive and disciplinary knowledge   **LH 2.4, LH 3.1, LH 3.6** | | | |
| * Disciplinary knowledge involves knowledge of methods scientists use to answer questions, knowledge of apparatus and techniques, data analysis and knowledge of how science uses evidence to develop explanations   **LT 3.2** | | | | * To identify disciplinary knowledge when looking at planning   **LH 3.3** | | | |
| * That disciplinary knowledge needs to be taught explicitly rather than absorbed through practice, revisited and embedded with substantive content (where appropriate) as working scientifically underpins the nature, processes and methods of science   **LT 3.2, LT 3.3, LT 3.5, LT 3.6** | | | | * Working scientifically can be embedded into teaching and learning in the science PoS   **LH 3.1, LH 3.3, LH 3.4, LH 3.6** | | | |
| * There are 5 types of enquiry - observation over time; pattern seeking; identifying, sorting and classifying; comparative and fair testing, as well as research using secondary sources   **LT 3.2** | | | | * To identify the 5 types of enquiry (observation, pattern seeking; sorting and classifying; fair testing and secondary sources) when planning and teaching   **LH 3.1, LH 3.4, LH 4.6** | | | |
| * It is important to raise aspirations for all in science through connections to science capital and representation of a diverse range of scientists   **LT 1.1, LT 1.2, LT 1.6** | | | | * To connect the science PoS to real life contexts and to a diverse range of scientists   **LH 1.2** | | | |
| * Different pedagogical approaches are needed for effective science teaching such as first-hand practical experiences that are supported by questioning, modelling and scaffolding   **LT 2.9, LT 4. 2, LT 4.3, LT 4.4, LT 4.6** | | | |  | | | |
| * Language is important for conceptual development in science including talk for science and the understanding of scientific vocabulary   **LT 4.7** | | | | * Plan opportunities for children to talk in science in order to share ideas and build conceptual knowledge   **LH 3.20, LT 3.21, LH 4.15** | | | |
| * There are different ways to group the children to develop shared values for learning (inside and outside the classroom), reflect adaptive practice, enabling all children to succeed and support behaviour management   **LT 1.4, LT 5.5, LT 7.1. LT 7.2, LT 7.4** | | | | * To make good use of the classroom and groups of children to promote positive behaviour and support children’s individual learning needs and promote independence   **LH 2.9, LH 5.1, LH 5.2, LH 5.5, LH 5.7, LH7.2, LH 7.9** | | | |
| * When planning for learning in EYFS UtW:TNW/NC science, clear sequencing of components is needed to facilitate progress towards a composite outcome within a lesson/sequence of lessons and this includes checking prior learning, anticipating misconceptions, developing schemata alongside avoiding overloading working memory, repeated practice and developing recall and retrieval   **LT 2.2, LT 2.4, LT 2.7, LT 2.8, LT 3.3, LT 4.2** | | | | * Single lessons and sequences of lessons in EYFS UtW:TNW/NC science are clearly sequenced to break down learning into components in order to support children’s progress such as involving prior learning, anticipating misconceptions, repeated practice and retrieval   **LH 2.1, LH 2.3, LH 2.4, LH 2.5, LH 3.4, LH 4.1** | | | |
| * Ways of adapting teaching in EYFS UtW:TNW/NC science can include targeted support and deployment of teaching assistants (TAs) to ensure progress for all including children with SEND and EAL, those who are disadvantaged (pupil premium) and those who require stretch and challenge   **LT 5.1, LT 5.3, LT 5.4, LT 5.5, LT 5.7, LT 8.5** | | | | * Adaptive teaching in EYFS UtW:TNW/NC science needs to be planned for in order to impact on all groups progress either to scaffold and challenge   **LH 5.1, LH 5.2, LH 5.12** | | | |
| * Formative assessment in science includes efficient strategies such as identifying prior- learning, questioning, identifying misconceptions, retrieval exercises and verbal and written feedback   **LT 6.1, LT 6.3, LT 6.4, LT 6.5, LT 6.7** | | | | * Formative assessment opportunities should be efficient, identified on planning and clearly link to lesson objectives and when teaching formative assessment information is gathered in readiness for the next lesson   **LH 6.1, LH 6.4, LH 6.5, LH 6.6, LH 6.7, LH 6.8, LH 6.10** | | | |
| * Science is summatively assessed and this includes end of key stage judgements and in EYFS using the ELGs   **LT 6.1, LT 6.3, LT 6.4** | | | | * To use the end of key stage one science exemplification materials to make summative assessment judgements   **LH 6.2, LH 6.3** | | | |
| * Seek out CPD opportunities using their knowledge of research and science specific providers e.g. STEM learning centres, PSST, ASE   **LT 8.1** | | | | * Effective professional development in science can be continued over time   **LH 8.1** | | | |
| **Phase 3** | | | | | | | | | |
| **School/Practical Based Learning - Consolidation** | | | | | | | | | |
|  | **Learn That** | | | **Learn How** | | | | |  |
| **Component Knowledge** | * Teachers utilise strong subject, curriculum and pedagogical knowledge to plan EYFS UtW:TNW/NC science lessons by breaking key learning down into small steps   **LT 2.1, LT 2.2, LT 2.4, LT 3.1, LT 3.2, LT 4.2** | | | * To sequence components of essential concepts, knowledge and skills in EYFS UtW:TNW/NC science that will support children to make progress and reach their composite outcomes across a lesson and/or sequence of lessons   **LH 2.4, LH 3.1, LH 4.1** | | | | | **Intent** |
| * Substantive and disciplinary knowledge are incorporated into effective lesson plans   **LT 3.2, LT 3.3, LT 3.5** | | | * To combine substantive and disciplinary knowledge within science lesson/s with initial mentor support   **LH 3.1, LH 3.3, LH 3.4, LH 3.6** | | | | |
| * NC Science lessons will be planned using different types of enquiry   **LT 3.2** | | | * To plan and teach using an aspect of the 5 types of enquiry (observation, pattern seeking; sorting and classifying; fair testing and secondary sources) when planning and teaching   **LH 3.1, LH 3.4, LH 4.6** | | | | |
| * Supporting children to learn EYFS UtW:TNW/NC science through first hand practical activity and by questioning, modelling and scaffolding are essential to support recall and retrieval   **LT 4. 2, LT 4.3, LT 4.4, LT 4.6** | | | * Use practical methods, processes and skills to teach EYFS UtW:TNW/NC science using effective questioning, modelling and scaffolding aiding learning and progress   **LH 3.1, LH 3.4, LH 4.6** | | | | |
| * Lesson/series of lessons consist of carefully sequenced components that facilitate progress towards a composite outcome including checking prior learning, anticipating misconceptions, developing schemata alongside avoiding overloading working memory, repeated practice and developing recall and retrieval   **LT 2.2, LT 2.4, LT 2.7, LT 2.8, LT 3.3, LT 4.2** | | | * To plan and teach single lessons and sequences of lessons in EYFS UtW:TNW/NC science that are clearly sequenced to break down learning into components in order to support children’s progress such as involving prior learning, anticipating misconceptions, repeated practice and retrieval   **LH 2.1, LH 2.3, LH 2.4, LH 2.5, LH 3.4, LH 4.1** | | | | |
| * Planning for talk in EYFS UtW:TNW/NC science fosters development in scientific vocabulary   **LT 4.7** | | | * Plan and teach EYFS UtW: TNW/NC science lesson/s that promote talk to develop scientific vocabulary   **LH 4.1,** **LT 4.7** | | | | |
| * Effective behaviour management and class grouping impacts on learning and progress   **LT 1.4, LT 5.5, LT 7.1. LT 7.2, LT 7.4** | | | * To plan and teach effective lessons by considering appropriate behaviour management strategies and class groupings to organise practical lessons   **LH 2.9, LH 5.1, LH 5.2, LH 5.5, LH 5.7, LH7.2, LH 7.9** | | | | |
| * Teachers plan for adaptive teaching such as deployment of TAs and also adapt during their EYFS UtW:TNW/NC science lessons according to the needs of the particular groupings to be fully inclusive of all learners   **LT 5.1, LT 5.3, LT 5.4, LT 5.5, LT 5.7, LT 8.5** | | | * To plan and teach EYFS UtW:TNW/NC science lesson/s that are reflective of adaptive teaching practice to impact on children’s progress   **LH 5.1, LH 5.2, LH 5.12** | | | | |
| * Teachers use a variety of efficient formative assessment strategies to assess learning in EYFS UtW:TNW/NC science   **LT 6.1, LT 6.3, LT 6.4, LT 6.5, LT 6.7** | | | * To plan and teach EYFS UtW:TNW/NC science lesson/s that uses formative assessment effectively to inform future lessons   **LH 6.1, LH 6.4, LH 6.5, LH 6.6, LH 6.7, LH 6.8, LH 6.10** | | | | |
| **Assessment** | **Assessment: University Based Learning** | | | **Assessment: School Based Learning** | | | | | Impact |
| Formative assessment approaches:   * Full subject knowledge audit * Tutor questioning * Peer discussions and focused tasks * Subject Progress reviews - PebblePad portfolio reflections   Summative assessment approach:   * Professional viva | | | Assessed throughout Professional Practice 3: Consolidation   * Weekly Development Summary – assessing progress on a weekly basis focusing on key strands of the EHU curriculum which includes discussion focus tasks * Lesson observations – subject specific feedback * Progress reports * Reflections in blue book including child observation | | | | |
| **Composite Knowledge** | **Composite knowledge/understanding/skills** | | | | | | | |
| *By the end of this phase trainees will* ***know:*** | *By the end of this phase trainees will* ***understand:*** | | | | | *By the end of this phase trainees will* ***be able to:*** | |
| * Make informed decisions about science planning, teaching and assessing learning for the phase in which they are teaching based on the appropriate level of subject knowledge * How to plan for the needs of the learners within their school-based placement | * How to use a school’s medium-term sequenced plans and schemes of work as a starting point to sequence learning * How to plan and teach for effective learning in science by carefully sequencing learning to best facilitate transferal to long term memory and adapting teaching to be inclusive and to scaffold and stretch | | | | | * Use subject and curriculum knowledge to plan and teach science lesson/s which use science specific pedagogies and enquiry skills to facilitate progress that draws on children’s prior learning, addresses misconceptions, sequences learning and integrates formative assessment | |
| **Research** | **KEY RESEARCH****That Trainees will know that informs teaching and learning in Science** | | | | | | | | |
| * Primary Science Knowledge & Understanding, 2021 Peacock, Sharp, Johnsey, Write and Sewell * Primary Science Theory & Practice 2021 Sharp, Peacock, Johnsey, Simon, Smith, Cross and Harris * Research Review: Science 2021 Ofsted * The Teaching of Science in Primary Schools 2017 Harlen and Qualter * Maintaining Curiosity 2013 Ofsted * ASE: Guide to Primary Science, 2018 Serret and Earle * ASE materials * STEM learning centre materials * PSST materials * PLAN primary science * National Curriculum 2014 DfE | | | | | | | | |