**Primary PGCE**

**Study Guide, Curriculum Sequence and Core Content Framework (CCF) mapping document FOR MATHS PATHWAY TRAINEES**

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Primary PGCE Programme Values and Beliefs

All children deserve to be able to access, participate in and engage with learning, and have the best possible education experience. We know that good teachers are at the heart of this. With this in mind, we aim to develop **critically reflective** teachers - able to challenge existing assumptions (including their own) to adapt and develop their practice to meet the changing needs of their pupils. Our programme is designed to enable trainees to **understand and interrogate the principles of teaching and learning** which lie beneath practice, so that they can make **informed choices in their own practices**. We aim to develop trainees' confidence in **engaging with research** by helping them to understand and interpret research findings, and through direct experience of small-scale research-informed studies. Through this, we develop future teachers who have **agency**; they are adaptable, informed, and passionate about pupil learning. The Primary PGCE programme is designed to enable trainees to develop their pedagogical subject knowledge across the primary curriculum as well as developing their understanding of wider issues in education. The opportunity to specialise via different pathways allows trainees to develop their leadership potential by exploring such areas as curriculum design or a curriculum subject in more depth. Equipped with these qualities and skills, our trainees will join a wide community of teachers making a positive contribution to schools and a difference to children’s lives.

**Primary PGCE Programme aims**

Education is a complex and intellectually challenging process, the fundamental purpose of which is to prepare young people to take a full part in a changing, pluralist, and democratic society. Good teaching promotes effective learning. Throughout the PGCE year you will develop a personal and professional rationale for teaching and learning. The programme enables you to acquire the values, commitments, knowledge, understanding and skills that all teachers need. It also offers you opportunities for the development of personal transferable skills (self-management, learning skills, communication, teamwork, problem-solving and data-handling skills) and will provide you with the first stages in your profile of continuing professional development as a teacher. The programme contributes to both your immediate and your continuing professional education. At the end of the programme, you should be an effective classroom teacher, able to demonstrate your competences and to become an integrated member of the school community wherever you work. You will be equipped to work collaboratively and in dependently, with commitment to the all-round education of children. In the longer term, the PGCE course lays the foundation for lasting professional development. The PGCE programme leads into the MA Education programme, which we hope most of you will continue to during your first years of teaching. The Primary PGCE programme been designed to meet the requirements for Initial Teacher Education as set out in the Teachers’ Standards (DfE 2012) and ITT Criteria (DfE 2020).

**The aims of the University of Exeter Primary PGCE Programme are to:**

* achieve the standards necessary to qualify as a school teacher as identified in the Teachers’ Standards (2012)
* provide you with opportunities to engage with current research and debates in your field and consider the relationship between theory and practice
* develop your knowledge and understanding of how children learn and develop, and of the factors that can impact on their learning
* develop and extend your knowledge and understanding of the primary school curriculum, effective pedagogies and assessment strategies
* support the development of your subject knowledge and pedagogy to enable you to confidently teach across the primary age range
* develop knowledge and understanding of the teachers’ roles and responsibilities
* develop your understanding of how to plan your teaching to ensure progression and continuity across the curriculum areas and between phases
* provide advice and support to colleagues on curriculum content, pedagogy and assessment within a selected specialist subject, age-phase or context
* enable you to develop the skills of review, monitoring and evaluation, in order to contribute creatively and confidently as a new colleague in school, and to work successfully across multi-professional teams
* help you to recognise the importance of continuing professional development in supporting critical thinking, reflective practice and informed decision-making
* develop the ability to teach with imagination, enthusiasm and courage, and respond creatively to change.

## Introduction

Your training year is just the beginning of your development as a teacher, and you will *not* exit the year knowing everything there is to know about teaching and learning. Instead, we aim to support you in becoming an autonomous, independent, critically aware and reflective practitioner - someone who is able to identify your strengths and areas for development, with a desire to keep learning, to keep growing and to keep engaging with developments in our wider understanding of teaching.

This course is founded on the concept of **principled**, **reflective** **practice**, the idea that we should approach teaching with an informed understanding of pedagogy, how children learn, and what values drive what we do in the classroom. Smagorinsky describes how different this is to the "silver bullet" notion of "best practice" (2009, p.15). While the idea of 'best' implies that there might be a fixed set of approaches to teaching that are always superior, the concepts of 'reflective practice' and 'principled practice' instead focus on thinking about why we teach in certain ways, and the impact this might have on our students. This focus on 'why' invites you to make links between research and practice, to reflect on your own values, to unpick the hidden assumptions that can lie beneath the surface of any teaching activity, and to consider how teaching and learning always operates in context.

Above all, we invite you to view your knowledge of how to teach as an evolving, flexible entity. You are not accumulating a fixed and static body of knowledge about practice, ready to transfer into your teaching; rather, you are learning about evidence-informed, research-inspired approaches to teaching that you can try out, reflect on and develop in your own classrooms. Just as research is always marching forward, as a teacher the way that you teach will likely evolve and change considerably over time. Our curriculum map offers one synthesis of current knowledge: but the principles that underlie your teaching will ultimately be your own.

# Welcome to the Primary Mathematics Pathway

**Aims**

The aims of the Primary Mathematics Pathway Module are to:

* equip you with a comprehensive understanding of the issues surrounding the current teaching and learning of mathematics in the primary school
* provide you with understanding of best practice in mathematics teaching and learning
* equip you with the skills and knowledge to ‘think like a leader’ in primary mathematics
* build on your learning developed in other areas of the PGCE course
* nurture reflective and autonomous professional practitioners who can identify strengths and areas for development
* encourage a thorough evaluation of current professional practice in relation to developments in research and curriculum theory and the ability to relate this to pupils’ needs

It is expected that, by the end of this module, you will be able to:

* engage in critical debate about current issues in primary mathematics, drawing on evidence from theory, research and practice
* recognise pupils’ diverse learning needs in mathematics and interpret them, to plan, teach, assess and evaluate lessons and schemes of work
* demonstrate confident academic and pedagogic subject knowledge including the use of technological tools
* demonstrate a secure understanding of curriculum design in primary mathematics and the requirements of the National Curriculum
* understand how effective teaching has a positive effect on pupils’ behaviour

# The Curriculum

## Theoretical Framing

Our curriculum coheres around the *Exeter* *Model* *Framework* which draws together a spectrum of issues that sociocultural theories identify as important in educational decision making. This framework is used in a number of ways - not least as tool that you'll use to explore some he key topics within our curriculum through *framework reflections.*



**The overall course is based on principles drawn from socio-cultural theories of learning. Learning to teach involves:**

* Situated activity - learning within a school context (‘Community of Practice’ –Lave and Wenger 1991)
* Opportunities for dialogue with others, particularly those more experienced (Vygotsky 1978; Mercer, Wegerif & Major 2019)
* Scaffolded progress towards independent practice (see Wood, Bruner, Ross 1976)
* Tools to make sense of the knowledge, skills and social and political contexts of teaching (see Engeström, 1999)
* Deliberately reflective thinking about teaching and learning, strengthened through engagement in classroom research (Schon 1987; Beauchamp 2015)
* Understanding that contradictions (e.g. between theory and current practice or between a teachers' view and a trainees' expectations) are stimuli for exploration of why these differences occur and for new thinking and practice. They are points of creative growth for individuals and ultimately for the system.

Beauchamp, C. (2015). Reflection in teacher education: issues emerging from a review of current literature. *Reflective Practice*, *16*(1), 123-141.

Engeström, Y. (1999). Activity theory and individual and social transformation. *Perspectives on activity theory*, *19*(38), 19-30.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge university press.

Mercer, N., Wegerif, R., & Major, L. (Eds.). (2019). *The Routledge international handbook of research on dialogic education*. Routledge.

Schön, D. A. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. Jossey-Bass.

Smagorinsky, P. (2009). EJ Extra: Is It Time to Abandon the Idea of" Best Practices" in the Teaching of English? *The English Journal*, *98*(6), 15-22

Vygotsky, L. S. (1978). Socio-cultural theory. *Mind in society*, *6*, 52-58.

Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of child psychology and psychiatry*, *17*(2), 89-100.

Primary PGCE Programme Structure **– please see the Programme Handbook for a more in-depth look at how the course is structured**

The primary PGCE programme curriculum is structured to enable you to develop in-depth knowledge of subject-specific pedagogy in all primary curriculum subject areas, in the **Curriculum Studies Module**. This will give you a chance to explore and consolidate your understanding of pedagogical principles as they relate to *specific areas* of the curriculum.

Throughout the programme you will explore core concepts, moving from foundation concepts in the autumn term taught course towards adaptive expertise, both within curriculum subjects but also through the themed **Educational and Professional Studies Module**. Your understanding of how to engage critically with research and to develop your reflective practice is also sequenced through formative and summative assignments with reading and reflecting on research, then moves into developing confidence in conducting your own research-informed study. Your **Pathway Module** allows you to develop in-depth knowledge within a specialised area.

These strands work alongside your **school-based training** which offers more contextual, situated sessions to help you to translate theory into practice.

**The Teachers' Standards for QTS and Core Content for Initial Teacher Training**

Our curriculum does not separate out the [Teachers' Standards](https://www.gov.uk/government/publications/teachers-standards) and address them one by one. This is because we recognise how interrelated many of the standards are, and that you will be constantly developing your understanding and skills across all of the standards.

However, the Department for Education has published recommended 'Core Content' for Initial Teacher Training which offers a framework which should be considered a "minimum entitlement" for all trainees, and this presents the content atomistically against each standard: <https://www.gov.uk/government/publications/initial-teacher-training-itt-core-content-framework>.

The tables which follow present the DfE core content and show the key areas where we integrate this information into our course - through topics, tasks, assignments and seminars. They also indicate some of the ways in which our course goes beyond this minimum entitlement, outlining some additional ideas that you will explore.

Each year there are also additional optional enrichment opportunities, including the Graduate School of Education Research Lecture series in which leading experts present on a range of important educational topics each year.

Alongside the academic content, we support your progress towards the standards through our **phases**. There are different expectations within each phase - for example, of how much classroom contact time you have, or which training tools you use to evaluate and reflect. This *scaffolds* your progress in a gradual sequence which moves towards independent practice.

The 'profile descriptor' of each phase describes the knowledge, understanding and skills that we expect you to be able to demonstrate at the end of it. The movement through the phases is **flexible**, depending on your needs. Meeting the 'Developing Independence' phase indicates that you have met the standards required for the award of QTS.

Anticipating Practice

Enrichment and Extension

Beginning Practice

Consolidating Practice

Developing Independence

Your phases of development

# Primary Maths Pathway

## Overview of the year

NB This if for the year 2021-22 as the Maths pathway will not run for 2022-23.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Wk | Dates | **Topic** | CCF links | Tutor |
|  | ***Autumn Term*** |
| ***Anticipating Practice*** | 1 | Monday 20/0910:30 – 11:30, 11.45 to 1.30. | **Introduction to the course**Nature of mathematics; belief in mathematics; Knowledge quartet for teaching***Group tutorials for Action Plan 1*** | 1.1-1.6, 2.1, 2.2, 2.9, 3.1-3.8, 4.1-4.4, 5.1-5.4, 5.6, 6.1-6.4, 7.1-7.7 | TF |
| 1 | Friday 25/09 | **Introduction to your first assignment.**Mathematics education as design science; designing mathematically rich tasks | 1.1-1.6, 2.1, 2.2, 2.6, 2.9, 3.1-3.8, 4.1-4.4, 5.1-5.4, 5.6, 6.1-6.4, 7.1-7.7 | TF |
| 2 | Friday1/10 | **Mathematical thinking, understanding and problem solving**Mathematical thinking and understanding; Open tasks in mathematics; What-if-not? Strategies for extending problems | 1.1-1.6, 2.1, 2.2, 2.6, 2.9, 3.1-3.8, 4.1-4.4, 5.1-5.4, 5.6, 6.1-6.4, 7.1-7.7 | TF |
| 3 | Friday 8/10 | **Collaborative learning in mathematics** Collaborative learning; dialogic approach in mathematics; thinking together approach in mathematics; types of talk in group work | 1.1-1.6, 2.1, 2.2, 2.6, 2.7, 2.9, 3.1-3.10, 4.1-4.4, 4.7, 4.9, 4.10, 5.1-5.6, 6.1-6.6, 7.1-7.7 | TF |
|  |  | ***FA Specialist assignment 1 due****: critical analysis of an article* |
| 4 | Friday 15/10 | **Mathematical Explanation, Fluency in mathematics**What is mathematical explanation?; UMR model; designing productive practice in mathematics  | 1.1-1.6, 2.1-2.9, 3.1-3.8, 3.10, 4.1-4.4, 4.8, 5.1-5.4, 5.6, 6.1-6.6, 7.1-7.7 | TF |
| 5 | 18/10 – 23/10 | Master Study week |  |  |
| 6 | Monday 25/10 | ***FA Specialist Assignment 2:*** *Literature Review to be emailed in 25/10 (feedback by 15/11)* |
| 6 | Friday 29/10 | **Effective teaching in mathematics**Connective models of mathematics teaching; Beliefs in teaching | 1.1-1.6, 2.1, 2.2, 2.9, 3.1-3.8, 4.1-4.4, 4.6, 5.1-5.6, 6.1-6.7, 7.1-7.7 | TF |
| ***Beginning Practice*** | 7 & 8 | 1/11 -12/11 | School placement 1 autumn term  |  |  |
| 9 | Friday 19/11 | **Subject leadership**Input from a local school leader (Adam Peters); Subject leadership in schools; Opportunities for CPD  | 1.1-1.6, 2.1-2.9., 3.1-3.8, 4.1-4.11, 5.1-5.4, 5.7, 6.1-6.7, 7.1-7.7. 8.1-8.2, 8.7 | TF/AP |
| 10 | Friday 26/11 | **Use of ICT tools in mathematics education**The use of ICT tools in mathematics; Geogebra in classroom; Online mathematics teaching | 1.1-1.6. 2.1, 2.2, 2.9, 3.1-3.8, 4.1-4.4, 4.6, 5.1-5.4, 5.6, 6.1-6.6, 7.1-7.7 | TF |
| 11 | Friday 3/12 | **Problem solving and metacognition** Key mathematical properties for problem posing; effective problem solving strategies; roles of metacognition | 1.1-1.6, 2.1-2.9, 3.1-3.8, 4.1-4.6, 5.1-5.4, 5.6, 6.1-6.6, 7.1-7.7 | TF |
| 12 | Friday 10/12 | **Introduction to mathematics education research** Structure of summative assignment; peer assessment of problem solving booklets | 1.1-1.6, 2.1-2.9, 3.1-3.8, 4.1-4.10, 5.1-5.6, 6.1-6.7, 7.1-7.7, 8.2, 8.3 | TF |
|  |  | 06/01/2022 | ***Submission of EPS Assignment (feedback 27/01/22)*** |
|  | ***Spring & Summer Terms*** |
| ***Beginning Practice*** |  | 21/01 | **Seminar Day 1: EMPLOYABILITY CCF:** Applications and InterviewsThe Science of Birds - prep for the RSPB Big Garden Birdwatch. | **S3, S8** | TF |
|  | 11/02 | **Seminar Day 2: CROSS-CURRICULAR ML** Planning and reflecting for primary science | **S1, S2, S3, S4, S8** | TF |
|  | 11/03 | **Seminar Day 3: INCLUSION/Adaptive teaching** Subject Knowledge Blitz  | **S3, S5, S7** | TF |
|  | 26/04 | ***Submission of Specialist Pathway Assignment (Feedback 18/05/22)*** |
|  | 29/04 | **Seminar Day 4: Early Career** Becoming a Science Leader & Early career teacher resilience. | **S1, S2, S3, S4, S5, S6**  | TF |
|  | 30/06 | **Seminar Day 5** Final day of the course reflection and celebrations! | **S1, S2, S3, S4. S5, S6, S&, S8, part 2** | TF |

## Weekly Structure

**Session 1a**

Introduction to the module

Intended Learning Outcomes:

• begin to get to know the members of the group and the subject leader / tutor through collaborative activities;

• Know about strengths offered by others in the group;

• Reflect on our beliefs about mathematics and what our intentions are as teachers;

• Develop an understanding of the specialist course and its requirements;

Follow up work: Please begin to familiarise yourself with the following:

• Specialist Mathematics Study Guide

• Primary PGCE Handbook

• Exeter Learning Environment (ELE) http://vle.exeter.ac.uk/

• Set up a Group page on Facebook

• Learn names of maths specialists

EPS link: Purpose of education, Exeter model

**Session 1b**

Introduction to Problem Solving; The Exeter Model

Overview

This session will introduce a range of stimulating and enjoyable mathematical activities, some of which you could use with children. You will reflect on your own personal experience in carrying out the activities and explore Fujita and Hyde (2013) . In particular, we will discuss that problem solving and inter-related factors such as:

i) the processes of the mathematical enquiry: specialising, generalising, conjecturing,

convincing;

ii) the views of mathematics;

iii) the emotional state: getting started, getting involved, getting stuck, mulling, keeping going, being sceptical, contemplating.

The idea Substantial learning environments (Wittmann, 1995) will be introduced as design princples of mathematically rich tasks.

Intended Learning Outcomes

• Introduction of a range of stimulating and enjoyable mathematical activities, some of which you could use with children.

• Your own personal experience in carrying out the activities

• Problem solving and inter-related factors such as processes, views of mathematics, emotional state

• The idea Substantial Learning Environments (SLE)

• Understand how the Individual Development Profile (IDP) enables you and your tutors to map and monitor professional development over the year of the course

**Session 2**

Designing mathematical tasks for Mathematical Thinking, Reasoning and

Understanding

Overview

In this session we will review what mathematical thinking would and should be involved in problem solving. Mathematical thinking is a complex integration of a variety of different cognitive and metacognitive skills. We will explore this complexity and consider differentconstructions of what mathematical thinking is, and how these might impact differentially upon pedagogy. In particular we will reflect on how narrow constructions of mathematical thinking might serve to constrain and limit the classroom experience.

Case study: Mathematical reasoning from a Y4 classroom

Intended Learning Outcomes

• To discuss how to design mathematically enrich tasks

• To understand mathematical thinking as a composite of many cognitive skills

• To understand how pedagogy can both support and constrain this complexity

• To enjoy and share mathematical problems

• To analyse problem-solving strategies and compare with NC Ma1 Using and Applying

• To consider the affective aspects of learning

• To explore strategies to support children in overcoming difficulties

**Session 3**

The role of talk and collaborative group work in mathematics. Discussion of Specialist Subject Assignment 1 (formative)

Preparation: You should bring your notes for Specialist Subject Assignment 1 to this seminar where you will have the opportunity to share and discuss ideas in small groups.

Overview

Talk has been seen as an important element of the primary classroom, and the primary strategies have supported this through ‘speaking and listening’ initiatives. The seminar focuses on the use of talk in mathematics classrooms as an approach to collaborative learning, the development of active engagement and the mutual construction of knowledge. Terms such as disputational talk, commutative talk, exploratory talk, and dialogic talk (Wegerif, 2013) will be introduced and discussed. You will have the opportunity to review explicit ground rules for developing group work and the use of talk in relation to the social aspects of learning and understanding in the mathematics classroom (e.g. Wegerif, Fujita, Doney, Perez Linares, Richards and van Rhyn in press or Kazak, Wegerif and Fujita, 2015)

Case study: Y7 UK children and G5/6 Japanese children’s group work

Intended Learning Outcomes

• To examine the role of talk within the primary mathematics classroom

• To relate to theory and empirical research

• To understand that learning is a social communicative act

• To understand how talk supports mathematical thinking

• To develop pedagogic strategies that utilise talk to support mathematical thinking

• To consider the extent to which activities encourage children’s talk and collaboration

• To discuss key issues relating to Specialist Subject Assignment 1

• to provide guidance for the formative Specialist Subject Assignment 2

**Session 4**

Mathematical explanations in problem solving

Designing tasks for procedural fluency

Overview

In this session we will explore what ‘good explanation’ in mathematics lessons. We will start defining mathematical explanations and examples, and discuss roles of teachers in classrooms for enriching pupils’ mathematical understanding. In this session we will also examine what tasks can be designed for developing pupils’ procedural fluency in mathematics.

Intended Learning Outcomes

• To examine good explanations in mathematics

• To critically reflect on roles of teachers in mathematical classrooms

• To discuss how we can develop pupils’ procedural fluency in mathematics

• To develop design principles for practice tasks in mathematics

**Session 5**

Effective Teachers of Mathematics: knowledge, beliefs and practices

Reflecting more deeply – the connectionist approach

Questioning & lesson/units planning

Preparation for Autumn Experience

Overview

This session will build on theories of learning explored in Professional Studies seminars. Differentteaching styles will be considered in relation to research into effective teaching of mathematics, and the kind of mathematics teacher you aspire to be. There will be input on the nature of pedagogic subject knowledge as distinct from subject knowledge. This will draw on your school experience to recognise and identify examples of pedagogic subject knowledge. You will be introduced to the research into effective mathematics teaching by M. Askew (1997).

Intended Learning Outcomes

• To review teaching styles and research into effective teaching

• To introduce the connectionist orientations

• To consider how to connect mathematical concepts

• To develop your knowledge for effective questioning in mathematics

• To consider how to connect mathematical concepts in your planning

• To explore open tasks and relate this to differentiation generally, and gifted and talented pupils in particular

**Session 6**

The role of the mathematics subject leader: Planning and assessment

Please hand in your Specialist Formative Assignment 2 to your Personal Tutor

Overview

This session will explore the roles of subject leaders. In particular we explore how positive attitudes towards maths will contribute to learning environments in schools. We will also share ideas about maths policy in primary schools, principles of teaching and how you underpin these into daily planning and practice including use of assessment.

Intended Learning Outcomes

• To consider principles of teaching of mathematics in your school

• To share ideas how you design maths policy and teaching approaches

• To learn how to plan effectively and use assessment to inform planning

• Be aware of roles of subject leaders in schools

**Session 7**

Enrichment topic:

Non-cognitive skills, Mathematical Anxiety and teaching interventions

Using ICT to support mathematics teaching and learning and Using context for problem solving

Overview

Non-cognitive skills. Non-cognitive skills are considered to be various individual attributes that cannot be measured by an IQ test or standardized cognitive test. Recent studies indicate non-cognitive skills are closely related to students’ academic achievement which will be discussed in the session.

Mathematical anxiety

Mathematics anxiety (MA) has been identified as a critical factor leading to poor achievementand engagement in mathematics and other quantitative disciplines (Hembree 1990). Previous research has established that MA can vary substantially among different groups of learners: for example, between males and females, and across different countries, cultures and disciplines of study. In this session we will share some data around MA in Y3 and 4 children and discuss what interventions might be useful to reduce children’s MA.

The use of ICT in the classroom

The second part of this session will also investigate the use of ICT to develop mathematical thinking and talk in the primary classroom. You will be introduced to a selection of programs, such as TouchCounts, Geogebra etc. as examples of software that can stimulate dialogic talk and mathematical thinking.

Intended Learning Outcomes

• To understand what anxiety children have in primary schools

• To explore what teaching interventions might be effective to reduce children’s mathematical anxiety

• to realise the potential of ICT in developing dialogic talk and mathematical thinking

• to enjoy and share mathematical problems

 **Session 8**

Enrichment: Data analysis in schools

Intended learning outcome

• To be aware of data analytics cycle in schools

• To review teaching approaches using real data for children

• To develop knowledge what skills can be enriched through data analytics activities

• To use technological tools to teach data analytics

Overview

This session will introduce data analytics in schools. We will review data analytics cycles, skills to be developed and resources for children. We will also evaluate technological tools for teaching Data analytics.

**Session 9**

Introduction of mathematics education research

Intended learning outcomes:

• To be aware of current issues in mathematics education

• To review nature of mathematics education research

• To know how to structure the assignment

• To develop how to pose your research questions

• To be aware different research methodologies

Overview

This session will introduce mathematics education research. The nature of inquiry will be reviewed (McKnight et al, 2000) and current issues methodological approaches will be introduced (e.g. Fujita & Yamamoto, 2011). This session will be directly related to your written assignment.

**Seminar Day 1**

Preparation of Spring Experience, Specialist Summative Assignment, and more problem solving

Preparation on school experience

Learning outcomes:

• be able to critically prepare experience in school;

• to critically set action plans for your developing professional practice;

• to engage problem solving in mathematics

• to understand the requirements for the Specialist Assignment;

• to be able to evaluate and discuss writing at Masters level.

Preparation:

• bring your IDP;

• read the example of a Masters level assignment which will be placed on ELE;

EPS link: Professionalism, Being a teacher

**Seminar Day 2:**

ML across the curriculum

Learning outcomes:

• be able to critically reflect on issues related to

• to understand how English as additional language develop their mathematical thinking through English

• to know impacts on language to mathematical thinking and understanding

Preparation:

• bring your ML task;

• bring your IDP;

• read the example of a Masters level assignment which will be placed on ELE;

• using the assignment and Master level criteria annotate the script with evaluative comments and suggest a grade.

EPS link: EAL

**Seminar Day 3:**

Inclusion in mathematics education

Learning outcomes:

• be able to critically reflect on issues related to inclusion in mathematics education

• be able to critically reflect on recent experience in school;

• to reflect on your developing professional practice

• understand the requirements for the Specialist Assignment;

• be able to evaluate and discuss writing at Masters level.

Preparation:

• bring your SEN task;

• summarise your school’s SEN policy;

• read the example of a Masters level assignment which will be placed on ELE;

• using the assignment and Master level criteria annotate the script with evaluative comments and suggest a grade.

EPS link: Inclusion

Developing Independence Phase - Summer Experience – school based work

**Seminar Day 4**: NQT year, Review of Summer Experience, a review of

Summative and Formative Assessment

Reflection on school experience

Learning outcomes:

• be able to critically reflect on recent experience in school;

• to reflect on your developing professional practice

Assessing progress in mathematics

Learning Outcomes:

• develop a deeper understanding of the role of both formative and summative assessment and different strategies for assessing work

• appreciate how effective assessment can improve performance

• share and develop understanding of a broader range of assessment for learning strategies

Preparation

• collect 3 pieces of formatively assessed mathematics work from each of 3 children of differing

abilities during your summer placement. The children could be your focus ones.

• the work should be from 3 different lessons taught within a unit of work – aim to collect pieces of

work from problem solving / investigation lessons.

• annotate the work with formative assessment comments that not only focus on the outcomes but

also the progression of learning that you can identify.

• identify two targets for future development for each child.

• bring the work and your notes for discussion.

EPS link: Professionalism, Leadership

**Final Seminar day**

Celebration of your achievement

• Programme to be announced (but quick reflections and celebrations!)

## Assignment details

The programme will use two types of assessment, i.e. peer assessed and summative assessment.

1. Peer assessed Assignment overview:

The following tasks and requirements are designed to support your mathematics subject and pedagogical knowledge:

• A problem solving booklet for specific aspects of mathematics

• Working with peers on a one-to-one basis to support their subject knowledge

development

1.1. Designing problem solving booklet

The problem solving booklet is a collaborative task. This is designed to enrich your subject and

pedagogical knowledge in one aspect of mathematics, either an aspect that is not covered in

depth on the curriculum studies mathematics course, or an aspect of mathematics that is

recognised as problematic for pupils, or of particular interest to you.

This task is designed to encourage you to deepen your subject and pedagogical knowledge

within one area of the National Curriculum mathematics. You will be provided with a list of topics

and organised in to groups. Initially you will work as a group to develop your knowledge and

understanding of the topic, to share ideas and collate material. You may want to draw on your

experiences in school to explore children’s understanding and written work. The booklet will be

undertaken collaboratively, and subsequently shared as a resource for the mathematics

specialists. Elements of the pack will be produced individually – see below.

Teachers’ Standards: Preamble, S1 – S6

Group Task:

Produce a problem solving booklet to contain the following:

• four mathematically rich problems (3 for KS1 and 3 for KS2)

• Two productive practice for consolidating calculation skills (1 for KS1 and 1 for KS2)

• A brief information for implementation of each problem/practice:

o Expected learning progression

o Mathematical thinking and reasoning involved

o Differentiation

o Cross curricular links

o Assessment opportunities

o Possible homework opportunities

• Identification of representations and resources to support teaching and learning of the

concept(s)– these should include ICT, commercial teaching resources and details of

homemade resources

• A section exploring issues relating to Special Educational Need(SEN)s and English as an

Additional Language (EAL)

Support:

• Examples will be given in the second session

• Your draft booklet will be shared and peer-assessed the session on 02/12/2015

A digital copy of your modified booklet that can be uploaded to the ELE as a shared resource

should be submitted to Taro by email by 14/12/2018.

Indicative Reading:

You should draw on your reading for the Integrated Study, and also on the readings within the

Mathematics Curriculum Studies handbook. The following publications may also be useful even

in 2020!:

8

NCETM (2008) Mathematics Matters – Final Report

https://oggiconsulting.com/wp-content/uploads/2018/05-Further-Reading/Mathematics-MattersFinal-Report.pdf

Nunes, T. Bryant, P. & Watson. A. (2009) Key understandings in mathematics learning Oxford:

University of Oxford

http://www.nuffieldfoundation.org/sites/default/files/MATHS\_COMBINEDv\_FINAL(1).pdf

Watson, A., Jones, K. and Pratt, D. (2013). Key ideas in teaching mathematics.

http://www.nuffieldfoundation.org/key-ideas-teaching-mathematics

1.2. Supporting peers in their subject knowledge:

As mathematics specialists you are encouraged to build on your existing subject knowledge and

consider how this underpins your developing pedagogical knowledge. You are asked to support

some of your peers who may lack confidence and expertise in the subject. For many trainees

this will be the first time they have studied mathematics in over five years, and lack of confidence

may simply result from forgotten rules that were never understood, but may be more deep

rooted. You are encouraged to carefully consider conceptual understanding and teaching

approaches to develop this.

The recent paper ‘A world class mathematics education for all our young people’ (2011)

highlights the critical importance of primary teachers, and the need for deep mathematics

knowledge and understanding (Vorderman et al 2011). All PGCE students have been asked to

complete a personal audit of their subject knowledge and understanding in mathematics. Many

of your colleagues will be expected to work on aspects of mathematics that they have identified

as needing revision or attention. This seems to be an ideal opportunity for you to engage in an

exciting and mutually beneficial activity. You have expertise in mathematics - others need help.

This requirement of the course, therefore, is intended to utilise your strengths and engage in an

activity common to primary staff rooms around the country – helping members of staff with

aspects of their mathematical understanding.

PGCE students who feel they need intensive one-one or small group support will be encouraged

to seek the support of a mathematics specialist in their curriculum studies group. You will be

required to carefully consider conceptual understanding of the topic, devise a short support

programme for the student(s) and monitor their progress.

In your core group seminars 7-9, you are also asked to lead a quick problem solving and group

discussions (up to 20 min).

Introduction to the role of subject leader in mathematics:

The main aim of the module is to extend your expertise in the teaching of mathematics as part of

meeting the Teachers’ Standards (for QTS). S8 of the Teachers’ Standards relates to ‘fulfilling

wider professional responsibilities’, and it is hoped that many of you will be interested in

becoming a future subject leader for mathematics. This will be explored through:

• Introducing problem solving to PGCE students. We ask that you lead groups of students in

curriculum studies mathematics seminars (after the taught input) to share the problem

solving work that you carry out in schools. You can find many mathematically rich

problems from nrich website http://nrich.maths.org/frontpage.

• An informal discussion with the mathematics subject leader in your Spring Experience

• A seminar exploring the role of the subject leader

Millett, A., Brown, M. & Askew, M. (2007) Primary Mathematics and the Developing Professional,

Dordrecht: Springer

2. Summative assessment

The Pathway Mathematics summative assignment is a critical evaluation of the teaching and

learning of mathematics (100%). The written assignment integrates your understanding of

appropriate literature with classroom observation and will be undertaken individually.

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Assignment title: A critical evaluation of mathematical thinking and understanding in primary

schools

Teachers’ Standards (for QTS) 3: Demonstrate a critical understanding of developments in the

subject and curriculum areas, and promote the value of scholarship

The formal assessment of the mathematics specialism will give you the opportunity to relate

theory and research to your professional practice through a critical evaluation of the teaching

and learning of mathematics. The information on the next page summarises the format of the

assignment, but you will also be given more detailed guidance at a later date. Hand-in for

pathway subject assignment 3 is on Tuesday 26/04/2022 (submit to eBART system).

Please note that in addition to the recommended books and other information sources listed in

this handbook, there are readings available in ELE and many of these may prove useful for your

assignment. It is expected that you refer to key course texts, where appropriate, as well as other

relevant literature that you have identified independently. It is important that you consider

theory, research, policy and practice, in both national and international contexts. Please pay

close attention to the marking criteria.

2.1. A critical evaluation of the teaching and learning of mathematics

You are encouraged to develop a theme in the teaching and learning of mathematics that you

can explore during the Spring Placement in which you will implement at least 2 problems from

your problem solving booklet which you collaboratively designed in the first term to either small

groups of children or whole classroom. We have provided three example themes that you could

explore, however we want to offer you the scope to explore from a wider range of topics to

meet your own learning needs. During your Autumn Experience you might identify a question

that is of pertinence to the class you are teaching, or for an individual child, or related to an

aspect of pedagogy. You should develop your study question and must discuss this with your

specialist mathematics tutor for guidance, to ensure this is appropriate and sufficiently focussed.

There are three elements to the assignment: a synthesis of relevant literature; a report of a

classroom observation based on your implementation of your problems relevant to your chosen

topic and a critically reflective discussion that draws on the literature and the observation to

address a given focus for debate. The final discursive element will demonstrate your own

engagement with the issues raised. It should reflect what you have learned from the reading and

from the observation. You should also be able to draw on ideas raised and discussed in seminars

from both the mathematics specialism and professional studies.

Three possible (optional) study questions:

Option 1. Theme: Mathematical thinking

Focus for discussion: An overemphasis on right answers in maths can mitigate against

mathematical thinking.

Option 2. Theme: Collaborative learning; constructing mathematical understanding through talk

Focus for discussion: Vygotsky believed learning was a social, communicative process. Consider

each of these words in turn in relation to how group work can support mathematical learning

and understanding. Also identify types of talks and analyse how various types of talk contribute

children’s understanding during the teaching and learning of mathematics in primary schools.

Option 3. Theme 3: Mathematical understanding

Focus for discussion: Investigate teaching approaches which will support a shift from procedural

to conceptual understanding of mathematics.

The above foci for discussion are offered as exemplar questions which you may choose to

explore, or alternatively you are invited to generate your own study question, either related to

mathematical thinking, collaborative learning or a theme of your choice, but please note the

point above regarding ensuring the study question is appropriate. You will be given an

opportunity to pose your own study question in the session

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Recommended assignment structure (approximate word limits, total = 5000 words):

Introduction, rationale of your study questions (400 words)

Literature review (1200 words)

Study contexts (500 words)

Critical evaluation of your practice and children’s learning (2500 words)

Conclusion (400 words)

Your written report should be single-sided, 1.5 or double-spaced and have 2.5cm margins. You

should use Harvard referencing conventions (see main PGCE Primary Handbook), address the

normal academic conventions and use Standard English.

You are strongly encouraged to look at the assignment marking criteria of the PGCE main

handbook. You should read your assignment and consider the extent to which you have

addressed these.

A sample of written reports will be second marked for moderation purposes.

Reading to support the observation

Baumfield, V. et al. (2008) Action Research in the Classroom, London, Sage

Croll, P. (1986) Systematic Classroom observation, Lewes: Falmer

Hopkins, D. (2002) A teacher’s guide to classroom research, (3rd Edition), Maidenhead: Open

University Press

Fujita T, Jones DK, Miyazaki M (2018). Learners' use of domain-specific computer-based feedback

to overcome logical circularity in deductive proving in geometry. ZDM, 50

Kazak S, Fujita T, Wegerif R (2016). Students' informal inference about the binomial distribution of

"Bunny hops": a dialogic perspective. Statistics Education Research Journal, 15(2), 46-61.

Koshy, V. (2010) Action Research for Improving Educational Practice, 2nd Edition, London: Sage

Publication

Mason, J. (2002) Researching your own practice: the discipline of noticing, London:

Routledge/Falmer

Tripp, D. (1993) Critical incidents in teaching: developing professional judgement, London:

Routledge

Teachers’ Standards: S

## Resources

## Further Reading

Askew, M. (2012) Transforming primary mathematics Oxon: Routledge

Briggs, M. & Davis, S. (2007) Mathematics in the Early Years and Primary Classroom (Creative

Teaching), London, David Fulton Exploring Mathematics with Young Children, Derby, ATM

Burton, L. (1984) Thinking Things Through, Oxford: Blackwell.

Hansen, A. and Vaukins, D. (2012) Primary Mathematics Across the Curriculum London: Sage

Koshy, V and Murray, J (Eds) (2011) Unlocking Mathematics Teaching Oxon: David Fulton

Mason, J. with Burton, L. and Stacey, K. (1988) Thinking Mathematically, Wokingham: AddisonWesley.

Rowland, T, Turner, F., Thwaites, A. and Huckstep, P (2009) Developing Primary Mathematics

Teaching London: Sage

Swan, M. (2006) Collaborative Learning in Mathematics: A Challenge to our beliefs and

practices, London/Leicester, NRDC/NIACE

Refereed Journals

Educational Studies in Mathematics (available electronically)

For the Learning of Mathematics

Journal for Research in Mathematics Education

Journal of Mathematical Behavior

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Research in Mathematics Education

ZDM – International Journal on Mathematics Education

Research Associations The British Society for Research into Learning Mathematics

www.bsrlm.org.uk

International Group for the Psychology of Mathematics Education

www.igpme.org

Periodicals

Mathematics in School

Primary Mathematics

Equals

Mathematics Teaching

Teaching Children Mathematics

Mathematics Associations

As a specialist mathematician it is essential that you maintain your reading and professional

development. We recommend that you join one of the professional associations for

mathematics.

The Association of Teachers of Mathematics (ATM)

7 Shaftesbury Street

Derby

DE3 8YB www.atm.org.uk

The Mathematical Association (MA)

259 London Road

Leicester

LE2 3BE www.m-a.org.uk

National Centre for Excellence in Teaching Mathematics also has a useful website at

www.ncetm.org It is an expectation of the course that you register with the NCETM.

An extensive range of Ian Thompson’s articles exploring calculation can be accessed from:

https://www.atm.org.uk/write/MediaUploads/Resources/Part\_1\_ian\_thompson.pdf

https://www.atm.org.uk/write/MediaUploads/Journals/MT204/ATM-MT204-06-08.pdf

https://www.atm.org.uk/write/MediaUploads/Resources/Ian\_Thompson\_part\_3.pdf

https://www.atm.org.uk/write/MediaUploads/Resources/Part\_4\_Ian\_Thompson.pdf

Resources

Young Children Learning Mathematics, Derby: ATM

Primary Points of Departure, Derby, ATM

Mathematical Challenges: available on ELE

Nrich: nrich.maths.org

BEAM: www.beam.co.u

# Mapping against the Core Content Framework (CCF)

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| **High Expectations (Standard 1 – ‘Set high expectations’)** |
| **Learn that…** | **Education and Professional Studies** | **Subject Knowledge and Pedagogy: Curriculum Studies and Pathway**  | **Professional Studies** |
| 1.1 Teachers have the ability to affect and improve the wellbeing, motivation and behaviour of their pupils. | Child DevelopmentBehaviourInformal LearningChild Protection and SafeguardingCurriculum design*Challenging the Gap Task* | **English:** Creating literacy environments which are safe and stimulating, and which motivate pupils to develop a love of reading, writing, and speaking and listening. The importance of providing pupils with a rich and varied diet of literature, which includes representations of minority groups, ethnicities, and languages. The importance of inclusive practice for pupils with SEND and EAL.**Mathematics:** Exploring calculation policies in schools, reflecting growth mind set and mathematical anxiety**Science:** Generating an exciting and relevant scientific environment, which motivates students to develop their scientific understanding. For instance, learning in nature, creating a crime scene for forensics, and traveling to Mars.**Art:** emphasis on art as communication, effective and affective dimensions**Computing:** Having a multi-modal approach to computing, which includes unplugged activities which can be done outside.**Design and Technology:** Creating a safe and stimulating environment.**Humanities:** Establishing a safe environment of mutual respect with comparisons of similarities and differences, championing diversity and global education.**Modern Languages: L**anguage learning strategies (e.g. memorisation), metacognitive strategies; understanding how children learn)**Music:** Foster of love of singing, instrumental playing and collaborative music making**PE:** Developing a safe, engaging and positive learning environment for *all* pupils to participate, progress and compete in PE and school sport. **Mathematics Pathway:*** Understanding the mathematics curriculum: issues of access; curriculum and task design
* Understanding belief and values of mathematics
 | **Children’s Learning** – Expectations and Target Setting |
| 1.2 Teachers are key role models, who can influence the attitudes, values and behaviours of their pupils. | BehaviourBeing a TeacherProfessionalism and Researchful Practice | **English:** Reflecting on the importance of providing a rich literature curriculum which includes and stimulates all pupils, including in minority contexts of EAL, representations of minority groups and language diversity**Mathematics:** Mathematics as human activities is introduced and positive attitudes towards mathematics is emphasised. Making mistakes is seen as a part of learning process for conceptual understanding as well as procedural fluency**Science:** Demonstrating scientific attitudes as well as understanding, through promoting scientific rigour and cultural responsiveness.**Art:** Modelling a highly positive attitude to art, craft and design and offering inspiration through curriculum and teaching**Computing:** Modelling and practicing a computing mind-set, with logical reasoning and creativity.**Design and Technology:** **Humanities:** Considering differentiation and inclusion in Geography, History and RE. Demonstrating positive attitudes in discussions for example in engaging with the Philosophy 4 Children project**Modern Languages:** Encouraging confidence in ML and curiosity about the world**Music:** Fostering a safe and simulating classroomenvironment for music making. Demonstrate positive attitudes, values and behaviour towards listening, appraising, composing and performing**PE:** Demonstrating a healthy, active lifestyle and positive attitude toward PE and inspiring pupils to learn through motivational lessons.**Mathematics Pathway:*** Modelling a positive attitude to mathematics
 |  |
| 1.3 Teacher expectations can affect pupil outcomes; setting goals that challenge and stretch pupils is essential. | Purpose of EducationCurriculum DesignEducational TheoryCreativity*Challenging the Gap* | **English:** Planning for progress within and across all planned episodes of teaching, and which take into account the diversity of pupils’ learning needs (e.g. SSP peer teaching and weekly plans)**Mathematics:** Problem solving activities to stretch pupils modelled by maths pathway trainees.**Science:** Exploring our own learning through Humanist educational theory.**Art:** setting suitably high expectations for all learners**Computing:** Input on computing with children with SEND**Design and Technology:** Set high expectations for all**Humanities:** Stimulating pupils using story to engage them with History, modelling use of videos and interactive activities and employing artefacts to draw in all pupils even those who may struggle with extended reading.**Modern Languages:** Knowledge about language (grammar, phonics, vocabulary)**Music:** Demonstrate high expectations and confidence for all aspects of music making**PE:** Planning motivational lessons which both challenge and support pupil learning.**Mathematics Pathway:*** KS2/3 transition
* Understanding progression in mathematics
* Collaborative learning
* Assessment
 | **Children’s Learning** – Expectations and Target Setting |
| 1.4 Setting clear expectations can help communicate shared values that improve classroom and school culture. | Behaviour*Challenging the Gap* | **English:** Reflecting on the importance of providing a rich literature curriculum which includes and stimulates all pupils, including in minority contexts of EAL, representations of minority groups and language diversity**Mathematics:** Setting clear expectations for use of maths equipment.**Science:** Demonstrating scientific values including the value of enquiry, knowledge, culture and decolonial science.**Art:** e.g., looking at values as explored through artworks**Computing:** **Design and Technology:****Humanities:** Humanities skills, develop understanding of what subject knowledge is important and providing access and resources for developing that. Examining pedagogical approaches to teaching Geography, History and RE. Engaging with current research in the field of humanities**Modern Languages:** Language learning strategies, importance of ‘having a go’**Music:** Promote high quality music making throughout the school**PE:** Setting realistic expectations and exploring shared values through PE.**Mathematics Pathway:** * Understanding of mathematics policy in schools
 | **Children’s Learning** – Expectations and Target Setting **Welfare:** Safeguarding and Pastoral Systems |
| 1.5 A culture of mutual trust and respect supports effective relationships. | BehaviourChild Protection and Safeguarding | **English:** Planning lessons that are safe and stimulating and which inspire learners to develop understanding of and empathy for others’ perspectives and lived experiences **Mathematics:****Science:** Planning and evaulating lessons that are motivating and inclusive.**Art:** ensuring balance between teacher-directed content and student choice**Computing:** Peer collaboration in activities**Design and Technology:****Humanities:** identifying own worldview and theevolutionary process that has formed these facilities greater mutual respect for those with different worldviews/religions. **Modern Languages:** Intercultural Understanding, creating a positive classroom atmosphere, understanding ML anxiety and affective filter (and dealing with our own)**Music:** Provide opportunities for creative thinking, exploration and practical work**PE:** Building positive teacher-pupil relationships based on trust, respect and support. **Mathematics Pathway:*** Understanding barriers to learning mathematics: mathematical anxiety
 |  |
| 1.6 High-quality teaching has a long-term positive effect on pupils’ life chances, particularly for children from disadvantaged backgrounds. | Race and Education: Preparing to teach children from all backgroundsAddressing issues of gender and social inequality*Challenging the Gap* | **English:** Motivating pupils to read for pleasure and reflecting on the positive impact that reading makes in children’s lives**Mathematics:****Science:**  Developing and nurturing a passion for science, and an understanding of its significance to our futures.**Art:** art making for enjoyment and wellbeing as well as knowledge and skill acquisition**Computing:** empowerment in the developing confidence in computing.**Design and Technology:****Humanities:** Setting high expectations for all pupils regardless of gender or ethnicity.**Modern Languages:** Planning for motivation and engagement; storytelling as stimulus for curriculum design**Music:** Promote a lifelong love of music and performing**PE:** Improving the life chances of all pupils through knowledgeable, confident and enthusiastic PE teaching.**Mathematics Pathway:*** High quality mathematics curricula
* Mathematics as an access issue in KS2 and beyond; linking advanced mathematical topics with primary mathematics
 | **Children’s Learning** – Expectations and Target Setting |

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| **High Expectations (Standard 1 – ‘Set high expectations’)** |
| **Learn how to…** | **SBW** |
| **Communicate a belief in the academic potential of all pupils, by:*** Receiving clear, consistent and effective mentoring in how to set tasks that stretch pupils, but which are achievable, within a challenging curriculum.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Using intentional and consistent language that promotes challenge and aspiration.
* Creating a positive environment where making mistakes and learning from them and the need for effort and perseverance are part of the daily routine.
* Seeking opportunities to engage parents and carers in the education of their children (e.g. proactively highlighting successes) with support from expert colleagues to understand how this engagement changes depending on the age and development stage of the pupil.

**Demonstrate consistently high behavioural expectations, by:*** Receiving clear, consistent and effective mentoring in how to create a culture of respect and trust in the classroom that supports all pupils to succeed (e.g. by modelling the types of courteous behaviour expected of pupils).

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Teaching and rigorously maintaining clear behavioural expectations (e.g. for contributions, volume level and concentration).
* Applying rules, sanctions and rewards in line with school policy, escalating behaviour incidents as appropriate.
* Acknowledging and praising pupil effort and emphasising progress being made.
 | Trainees use the Exeter Model training tools, in conjunction with consistent and effective mentoring from their LEAD MENTOR and REFLECTIVE MENTOR, to build on the expert input provided by the ‘Learn That…’ aspects of the curriculum to meet the ‘Learn how to…’ aspects at a pace and in a sequence that suits their individual needs.*Challenging the Gap Framework Task**SEND Framework Task* |

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| **How Pupils Learn (Standard 2 – ‘Promote good progress’)** |
| **Learn that…** | **Education and Professional Studies** | **Subject Knowledge and Pedagogy: Curriculum Studies and Pathway** | **Professional Studies** |
| 2.1 Learning involves a lasting change in pupils’ capabilities or understanding. | Educational TheoryChild DevelopmentInformal LearningProfessionalism and Researchful Practice | **English:** The importance of scaffolding pupils’ thinking as they perform everyday tasks of reading and writing**Mathematics:****Science:** Understanding the ‘threshold concept’, using analogies and models in science, and how significant these are to learning.**Art:** embodied learning in the subject**Computing:** Developing life-long computing skills**Design and Technology:** Developing lifelong making and designing skills**Humanities:** The enquiry approach in humanities is introduced and discussed in relation to a didactic approach to teaching Humanities**Modern Languages:** Language learning strategies, oracy and literacy**Music:** Provide children with high-quality opportunities to engage in practical work**PE:** Planning PE teaching which builds on pupils’ prior knowledge and experiences, carefully scaffolds their learning and monitors their progress.**Mathematics Pathway:** * understanding issues surrounding assessment of mathematics
* pedagogy of collaborative learning (how children learn)
* KS 2/3 transition
 |  |
| 2.2 Prior knowledge plays an important role in how pupils learn; committing some key facts to their long-term memory is likely to help pupils learn more complex ideas. | Educational Theory | **English:** Reading assessment task: reflecting on the importance of pitching books to pupils' instruction level of reading**Mathematics:** learning in maths – such as considering activities to discovery mathematical rules through enquiry and strategies to learn times tables etc.**Science:** The ideas of meta-cognition and, deep and shallow learning is discussed i.e. Why don't we just tell children the answers? Prior knowledge used in action.**Art:** activities should always build on prior experience and knowledge**Computing:** understanding the importance of building on prior learning.**Design and Technology:****Humanities:** Identification of ethno knowledge (pupils’ prior knowledge) crucial foundation point in humanities.**Modern Languages:** Language learning strategies**Music:** Understand the importance of prior learning and progression in the music curriculum. **PE:** Understanding the importance of pupils’ prior knowledge when planning motivational PE lessons.**Mathematics Pathway:*** Mathematics learning strategies
* Teaching problem solving strategies
* Number systems
* Mathematical reasoning
* KS2/3 transition
 |  |
| 2.3 An important factor in learning is memory, which can be thought of as comprising two elements: working memory and long-term memory. | Educational Theory | **English:** Learningstrategies which extend pupils’ long and short-term memory in everyday tasks of reading and writing. Making use of spaced retrieval and interleaving for the teaching of SSP**Mathematics:****Science:** revision of key points, time allocated for reflective practice.**Art:** revisiting key learning points is vital (eg visual elements, vocab etc.)**Computing:****Design and Technology:****Humanities:****Modern Languages:** rote learning in languages, graded questioning**Music:** Engage in singing and instrumental work using memory and recall**PE:** Drawing upon key learning theories (e.g. cognitive load) to inform planning and teaching in PE. **Mathematics Pathway:*** Closed and open questions
* Teaching new topics in mathematics
 |  |
| 2.4 Working memory is where information that is being actively processed is held, but its capacity is limited and can be overloaded. | Educational Theory | **English:** Understanding thedifferent kinds of cognitive load in writing (e.g. letter formation, spelling patterns, sentence construction) and how these make varied demands on young writersUnderstanding the “Simple view of reading” and the cognitive demands of decoding and text comprehension**Mathematics:****Science:** an analysis of tricky topics and how to teach them in science**Art:** ensuring activities are suitably paced and scaffolded**Computing:****Design and Technology:****Humanities:** Identify key elements of topics that need to focus on i.e. web pages with age-appropriate levels of information.**Modern Languages:** Understanding ‘little and often’ and ‘doing a lot with a little’ in relation to vocabulary, phonics and grammar**Music:** Structure practical music making appropriately**PE:** Understanding the importance of well demonstrated, explained and scaffolded learning activities to support pupil learning.**Mathematics Pathway:** * Understanding mathematical explanations for reducing cognitive load
 |  |
| 2.5 Long-term memory can be considered as a store of knowledge that changes as pupils learn by integrating new ideas with existing knowledge. | Educational Theory | **English:** Extending pupils’ repertoire of understanding of syntactic, textual and genre conventions when performing everyday tasks of reading and writing**Mathematics:****Science:** Practical hands-on experiences, with outdoor learning**Art:** knowledge in art can be gained haptically**Computing:** practical experiences **Design and Technology:****Humanities:****Modern Languages:** Language learning strategies, memory**Music:** Structure practical music making appropriately**PE:** Allowing time for pupils to learn in PE through meaningful discussion, exploration and experimentation in pairs/small groups. **Mathematics Pathway:*** Planning for progression
 |  |
| 2.6 Where prior knowledge is weak, pupils are more likely to develop misconceptions, particularly if new ideas are introduced too quickly. | Educational Theory | **English:** The importance of scaffolding pupils' learning via questioning; Barrett's taxonomy for probing pupils' understanding of texts in shared and guided contexts; activating pupils' prior knowledge; the importance of giving pupils meaningful experiences of writing and the importance of developing a wide vocabulary**Mathematics:** Importance of 'doing' mathematics with multiple representations (visual, symbolic, discursive, etc.) for conceptual understanding. Recognising children's misconceptions and how to support children's learning. Collecting children's work and misconceptions**Science:** Motivational approaches; Keller's ARCS model in relation to forensic science scenario. 3D models of Earth, sun and moon to represent science ideas. Misconceptions analysed throughout.**Art:** assess pupils’ knowledge as baseline at start of each new topic**Computing:** peer support helps with co-constructed skills and knowledge**Design and Technology:****Humanities:** Pedagogical approaches to RE introduced with the RE-searchers project. Peer teaching - Digimaps - progression in mapping skills.PE: Scaffolding pupils' learning through formative and summative assessment**Modern Languages:** Scaffolding, graded questioning, introducing new vocabulary, grammar, phonics, target language use**Music: S**caffold musical learning appropriately and look to build confidence**PE:** Using pupil assessment information (diagnostic, formative & summative) and knowledge of pupils to inform pair and/or small group work activities. **Mathematics Pathway:*** Planning for progression in mathematics
 |  |
| 2.7 Regular purposeful practice of what has previously been taught can help consolidate material and help pupils remember what they have learned. | Educational Theory | **English:** Understanding the importance of the spiral curriculum, building on previous knowledge (e.g. rehearsing different story patterns; revisiting spelling patterns)**Mathematics:****Science:** progression through ‘working scientifically’ skills.**Art:** revisit key content/ skills – eg regular drawing practice.**Computing:****Design and Technology:****Humanities:** When studying a variety of religions use worldview ultimate questions as a framework to address new religion.**Modern Languages:** Introducing new vocabulary, understanding progression, retrieval practice (vocab, phonics and grammar)**Music:** Engage in high-quality opportunities for structured practical music making – planned appropriately**PE:** Reviewing and practising skills previously learned both within and outside of PE curriculum time.**Mathematics Pathway:** Closed/open questioning, using old mathematical knowledge in new contexts |  |
| 2.8 Requiring pupils to retrieve information from memory, and spacing practice so that pupils revisit ideas after a gap are also likely to strengthen recall.  | Educational Theory | **English:** Understanding the importance of spaced practice in relation to learning new letters and sounds, spelling patterns, vocabulary and grammar**Mathematics:****Science:** bring in students' prior knowledge and experiences. **Art:** n/a in art**Computing:** n/a**Design and Technology:****Humanities:** Discussions on use of Knowledge organisers.**Modern Languages:** Understanding principles of spaced practice in relation to vocab, phonics and grammar**Music:** Develop a personal repertoire of songs and instrumental ideas and concepts**PE:** Understanding the importance of spaced practice in relation to learning new and prior knowledge and skills.**Mathematics Pathway:*** Number facts
* Calculation strategies
* Use of known facts
 |  |
| 2.9 Worked examples that take pupils through each step of a new process are also likely to support pupils to learn. | Educational Theory | **English:** The importance of scaffolding pupils with higher level questions as they learn new sounds, spelling patterns, vocabulary and grammar. Using shared reading and writing so that pupils are able to see the strategies used by expert readers and writers. **Mathematics:****Science:** an “electricity apprentice scheme”, which builds and scaffolds understanding.**Art:** teacher modelling - supporting aspirational expectations for learning**Computing:** writing a brief programme on Scratch.**Design and Technology:** modelling using tools, creating and designing products**Humanities:** Scaffolding learning in humanities**Modern Languages:** Scaffolding, graded questioning, introducing new vocabulary, grammar, phonics, target language**Music:** Introduce new and exciting repertoire to foster a love of music**PE:** Scaffolding pupils’ learning through clear and accurate demonstrations, illustrations, explanations and questions.**Mathematics Pathway:** * Mathematics learning strategies
* pedagogy of mathematics
* practical classroom ideas using contexts
 |  |

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| **How Pupils Learn (Standard 2 – ‘Promote good progress’)** |
| **Learn how to…** | **SBW** |
| **Avoid overloading working memory, by:*** Receiving clear, consistent and effective mentoring in how to take into account pupils’ prior knowledge when planning how much new information to introduce.
* Discussing and analysing with expert colleagues how to reduce distractions that take attention away from what is being taught (e.g. keeping the complexity of a task to a minimum, so that attention is focused on the content).

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Breaking complex material into smaller steps (e.g. using partially completed examples to focus pupils on the specific steps).

**Build on pupils’ prior knowledge, by:*** Discussing and analysing with expert colleagues how to sequence lessons so that pupils secure foundational knowledge before encountering more complex content.
* Discussing and analysing with expert colleagues how to identify possible misconceptions and plan how to prevent these forming.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Encouraging pupils to share emerging understanding and points of confusion so that misconceptions can be addressed.
* Linking what pupils already know to what is being taught (e.g. explaining how new content builds on what is already known).

**Increase likelihood of material being retained, by:*** Observing how expert colleagues plan regular review and practice of key ideas and concepts over time (e.g. through carefully planned use of structured talk activities) and deconstructing this approach.
* Discussing and analysing with expert colleagues how to design practice, generation and retrieval tasks that provide just enough support so that pupils experience a high success rate when attempting challenging work.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Balancing exposition, repetition, practice and retrieval of critical knowledge and skills.
* Increasing challenge with practice and retrieval as knowledge becomes more secure (e.g. by removing scaffolding, lengthening spacing or introducing interacting elements).
 | Trainees use the Exeter Model training tools, in conjunction with consistent and effective mentoring from their LEAD MENTOR and REFLECTIVE MENTOR, to build on the expert input provided by the ‘Learn That…’ aspects of the curriculum to meet the ‘Learn how to…’ aspects at a pace and in a sequence that suits their individual needs. |

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| **Subject and Curriculum (Standard 3 – ‘Demonstrate good subject and curriculum knowledge’)** |
| **Learn that…** | **Education and Professional Studies** | **Subject Knowledge and Pedagogy: Curriculum Studies and Pathway** | **Professional Studies** |
| 3.1 A school’s curriculum enables it to set out its vision for the knowledge, skills and values that its pupils will learn, encompassing the national curriculum within a coherent wider vision for successful learning. | Purpose of EducationCurriculum Design | **English:** Secure subject knowledge of English including phonics, grammar and spelling. Reading, writing and speaking and listening are positioned as meaning making activities in which pupils have the opportunity to discover more about themselves and the wider world**Mathematics:** Secure subject knowledge NC **Science:** Secure subject knowledge: plants, animals including humans, living things and their habitats, evolution and inheritance and ecosystems. The above is used to explore science as a habit of mind, and the pedagogy of science education. The educational theorist John Dewey and his ‘naturalist’ view of education is discussed in relation to lectures and workshops**Art:** creating a rich and diverse curriculum, acknowledging scope of the subject, with suitable continuity and progression**Computing:** a clear vision for what computing can be, following the curriculum aims.**Design and Technology:** a vision of what DT can be following the curriculum aims.**Humanities:** National curriculum for Geography and History. Locally agreed syllabus for RE – Devon.**Modern Languages:** The National Curriculum in ML**Music:** Promote a shared vision for musicial learning across the house tour**PE:** Secure subject knowledge and curriculum knowledge of PE including dance, games and gymnastic activities.**Mathematics Pathway:*** The National Curriculum
* Curriculum and task design in mathematics
* Recent history of primary mathematics in England
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| 3.2 Secure subject knowledge helps teachers to motivate pupils and teach effectively. | Child DevelopmentEducational Theory | **Pre-course audits and action plans for all curriculum subjects.****English:** Planning for peer teaching of grammar subject knowledge; peer teaching and planning of SSP. Use of children’s literature that motivates and encourages children to read and write for pleasure**Mathematics**: Planning for peer group – e.g. long division.**Science:** Highlighting chemical areas of NC (everyday materials, particle theory, states of matter, periodic table) and students' own SK to teach it effectively**Art:** Enhancing subject knowledge through practical explorations and examining artists’ work**Computing:****Design and Technology:****Humanities:** Examining NC to discover subject knowledge necessary for each KS. Subject knowledge RE panel of experts to model developing subject knowledge. RE- searchers - pedagogical approaches to SK.Peer teaching - with one religion deeper examination of that providing skills for how to develop greater SK, modelling historical enquiry for discovering SK. Stone age to iron age as a focus as this is often identified as a key area with limited SK in trainees**Modern Languages:** Modelling confidence and curiosity about ML**Music:** Develop confidence to teach music in a structured, developmental way**PE:** Enhancing subject knowledge in PE through collaborative learning in pairs/group work and demonstrations and modelling.**Mathematics Pathway:*** Initial Needs Analysis and subject knowledge target setting
* Modelling confidence and curiosity about mathematics for children and colleagues
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| 3.3 Ensuring pupils master foundational concepts and knowledge before moving on is likely to build pupils’ confidence and help them succeed. | Curriculum DesignEducational Theory | **English:** The importance of secure knowledge of SSP so that pupils can read and write fluently and independently and with enjoyment**Mathematics:** Sharing and experiencing different calculation strategies, using multiple representations to secure conceptual and procedural understanding for number operations**Science:** learning about space in increasing complexity, with night and day proceeding seasons for example.**Art:**  - eg encouraging regular drawing practice and use of key vocab/ concepts**Computing:** building on prior knowledge. **Design and Technology:** building on prior knowledge.**Humanities:** Revisiting key concepts – e.g. time, place, community.**Modern Languages:** The NC for KS2, subject knowledge auditing, action plan for SK**Music:** Develop subject knowledge for music teaching and engage with the four key areas of music (listening, appraising, composing and performing). Develop confidence and understanding of the inter-related dimensions of music (pitch, duration, dynamics, tempo, timbre, texture, structure and appropriate musical notations**PE:** Encouraging pupils to regularly practice and use key PE vocabulary/terminology**Mathematics Pathway:*** Pedagogical approaches to teaching: collaborative learning
* Connective models of teaching
* Teaching about culture
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| 3.4 Anticipating common misconceptions within particular subjects is also an important aspect of curricular knowledge; working closely with colleagues to develop an understanding of likely misconceptions is valuable. | Educational Theory | **English:** Peer teaching and planning of SSP and grammar, during which episodes trainees are given both oral and written feedback on their pedagogical and content knowledge**Mathematics:** lesson/episode planning including considering misconceptions**Science:** lecture specifically on misconceptions, with this addressed recursively**Art:** providing time for discussion and aiming to anticipate pupil difficulties**Computing:** discussing computing misconceptions.**Design and Technology:** addressing misconceptions.**Humanities:** Identifying potential misconceptions i.e. chronology.**Modern Languages:** Pedagogical approaches to teaching: listening, speaking, reading, writing, language learning strategies, grammar, teaching about culture**Music:** Understand common misconceptions in musical learning and how best to address these.**PE:** Discussing common misconceptions in PE and school sport and how to address them. **Mathematics Pathway:*** Pedagogical approaches to teaching: collaborative learning
* Connective models of teaching
* Teaching about culture
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| 3.5 Explicitly teaching pupils the knowledge and skills they need to succeed within particular subject areas is beneficial. | Educational TheoryCurriculum Design | **English:** Teaching of higher order thinking skills and questioning in reading (Barrett’s taxonomy) Providing contextualised reading and writing activities.**Mathematics:** Undertaking mathematically rich problem solving, undertaking using and applying mathematics (measurement, algebra); moreproblem solving in ratio/proportions**Science:** Analysis of distinct types of scientific enquiry.**Art:** teacher modelling of techniques, critical appraisal etc. **Computing:** direct participation in computational activities.**Design and Technology:** teacher modelling techniques and use of equipment.**Humanities:** Undertaking enquiries to answer authentic historical, geographical or religious questions.**Modern Languages:** Language learning strategies, cognitive load**Music:** Build on successes and ensure progression in learning**PE:** Teacher demonstrations and modelling of skills and techniques.**Mathematics Pathway:*** Problem solving strategies
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| 3.6 In order for pupils to think critically, they must have a secure understanding of knowledge within the subject area they are being asked to think critically about. | Educational Theory | **English:** Critical reading at text and sentence level; using grammatical features (e.g. use of the passive voice) to examine bias**Mathematics:****Science:** an examination of the principles of light, then enquiring how we can explore these. Enquiries often lead to critical questions which can precede knowledge, and consequently motivate further learning (“why do I go faster down the slide in my puddlesuit?”)**Art:** considering appropriate scaffolding – eg to support vocab/ concept knowledge**Computing:** this subject lends itself to a more 'spiral’ approach to this.**Design and Technology:** solving practical problems through critical questioning and trialling designs.**Humanities:** Questioning sources – reliability, bias etc.**Modern Languages:****Music: Encourage children to question, work critically and creatively explore in a safe environment****PE:** Teacher demonstration and modelling of how to think critically in an activity where subject knowledge is secure.**Mathematics Pathway:*** Pedagogical approaches to teaching: collaborative learning
* Connective models of teaching
* Teaching about culture
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| 3.7 In all subject areas, pupils learn new ideas by linking those ideas to existing knowledge, organising this knowledge into increasingly complex mental models (or “schemata”); carefully sequencing teaching to facilitate this process is important. | Educational Theory | **English:** Modelling of the planning process, from individual lesson plans to longer sequences of work, and identifying learners’ outcomes**Mathematics:****Science:** building on prior experience, culture, and knowledge. Seeing the interconnections from sub-atomic to celestial. Promote intellectual curiosity.**Art:** making connections is central to thinking like an artist**Computing:** emergent and interconnected curriculum activities.**Design and Technology:****Humanities:** Developing skills in Humanities to identify what knowledge is needed/desired in a new topic. Cross-curricular approaches to humanities**Modern Languages:****Music:** Foster a rich and vibrant curriculum to promote a love of music**PE:** Making connections between PE activities (e.g. dance, games, gymnastics) and between PE and other curriculum subjects (e.g. Science, MFL).**Mathematics Pathway:*** Curriculum and task design
* Planning for progression
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| 3.8 Pupils are likely to struggle to transfer what has been learnt in one discipline to a new or unfamiliar context. | Child DevelopmentEducational Theory | **English:** Opportunities to plan for cross-curricular English using high-quality children’s literature**Mathematics:****Science:** revising and re-learning scientific concepts, relevant for primary education, with links to real-life issues.**Art:** art can act as a useful vehicle for trandisciplinary learning – e.g. cross-curr links**Computing:** emergent and interconnected curriculum activities.**Design and Technology:** cross curricular links e.g. science.**Humanities:** Cross-curricular session to transfer skills – enquiry approach.**Modern Languages:****Music:** Develop links with other areas of the curriculum such as mathematics and humanity**PE:** Opportunities for interdisciplinary planning, teaching and learning between PE and Science (e.g. structure & function of the body systems).**Mathematics Pathway:*** Planning for progression
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| 3.9 To access the curriculum, early literacy provides fundamental knowledge; reading comprises two elements: word reading and language comprehension; systematic synthetic phonics is the most effective approach for teaching pupils to decode. | Educational TheoryChild Development | **English:** Secure subject knowledge of Systematic Synthetic Phonics; secure subject knowledge of grammar terminology; the importance of accurate pronunciation of phonemes; correct modelling of Standard English in shared and guided writing inputs; a deep understanding of how readers comprehend text; an understanding of the role of audience, purpose and genre in writing. An introduction to the use of decodable texts for early readers. **Mathematics:****Science:****Art:** n/a**Computing:****Design and Technology:****Humanities:****Modern Languages:** Phonics in ML**Music:****PE:****Mathematics Pathway:*** Pedagogical approaches to teaching: Use of language in mathmematics
* Connective models of teaching
* Teaching about culture
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| 3.10 Every teacher can improve pupils’ literacy, including by explicitly teaching reading, writing and oral language skills specific to individual disciplines. |  | **English:** Consistent modelling of Standard English and high-quality interactions with learners; taking opportunities to model to learners the thinking and decision-making processes involved in reading and writing across the curriculum**Mathematics:** Reflecting the use of language in mathematics teaching**Science:** discussion and peer dialogue to facilitate a co-constructed understanding.**Art:** eg. talking about art is central to learning in the subject**Computing:****Design and Technology:****Humanities:****Modern Languages:** Grammatical terminology, language learning strategies for reading, writing, listening and speaking**Music:****PE:** Developing pupils’ reading, writing, reading and listening skills through pair/small group work tasks and homework tasks.**Mathematics Pathway:*** Mathematical literacy
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| **Subject and Curriculum (Standard 3 – ‘Demonstrate good subject and curriculum knowledge’)** |
| **Learn how to…** | **SBW** |
| **Deliver a carefully sequenced and coherent curriculum, by:*** Receiving clear, consistent and effective mentoring in how to identify essential concepts, knowledge, skills and principles of the subject.
* Observing how expert colleagues ensure pupils’ thinking is focused on key ideas within the subject and deconstructing this approach.
* Discussing and analysing with expert colleagues the rationale for curriculum choices, the process for arriving at current curriculum choices and how the school’s curriculum materials inform lesson preparation.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Providing opportunity for all pupils to learn and master essential concepts, knowledge, skills and principles of the subject.
* Working with expert colleagues to accumulate and refine a collection of powerful analogies, illustrations, examples, explanations and demonstrations.
* Using resources and materials aligned with the school curriculum (e.g. textbooks or shared resources designed by expert colleagues that carefully sequence content).
* Being aware of common misconceptions and discussing with expert colleagues how to help pupils master important concepts.

**Support pupils to build increasingly complex mental models, by:*** Discussing and analysing with expert colleagues how to revisit the big ideas of the subject over time and teach key concepts through a range of examples.
* Discussing and analysing with expert colleagues how they balance exposition, repetition, practice of critical skills and knowledge.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Drawing explicit links between new content and the core concepts and principles in the subject.

**Develop fluency, by:*** Observing how expert colleagues use retrieval and spaced practice to build automatic recall of key knowledge and deconstructing this approach.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Providing tasks that support pupils to learn key ideas securely (e.g. quizzing pupils so they develop fluency with times tables).

**Help pupils apply knowledge and skills to other contexts, by:*** Observing how expert colleagues interleave concrete and abstract examples, slowly withdrawing concrete examples and drawing attention to the underlying structure of problems and deconstructing this approach.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Ensuring pupils have relevant domain-specific knowledge, especially when being asked to think critically within a subject.

**Develop pupils’ literacy, by:*** Observing how expert colleagues demonstrate a clear understanding of systematic synthetic phonics, particularly if teaching early reading and spelling, and deconstructing this approach.
* Discussing and analysing with expert colleagues how to support younger pupils to become fluent readers and to write fluently and legibly.
* Receiving clear, consistent and effective mentoring in how to model reading comprehension by asking questions, making predictions, and summarising when reading.
* Receiving clear, consistent and effective mentoring in how to promote reading for pleasure (e.g. by using a range of whole class reading approaches and regularly reading high-quality texts to children).
* Discussing and analysing with expert colleagues how to teach different forms of writing by modelling planning, drafting and editing.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Teaching unfamiliar vocabulary explicitly and planning for pupils to be repeatedly exposed to high-utility and high-frequency vocabulary in what is taught.
* Modelling and requiring high-quality oral language, recognising that spoken language underpins the development of reading and writing (e.g. requiring pupils to respond to questions in full sentences, making use of relevant technical vocabulary).
 | Trainees use the Exeter Model training tools, in conjunction with consistent and effective mentoring from their LEAD MENTOR and REFLECTIVE MENTOR, to build on the expert input provided by the ‘Learn That…’ aspects of the curriculum to meet the ‘Learn how to…’ aspects at a pace and in a sequence that suits their individual needs.*ML Framework Task**PE Framework Task**Mathematics Framework Task* |

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| **Classroom Practice (Standard 4 – ‘Plan and teach well-structured lessons’)** |
| **Learn that…** | **Education and Professional Studies** | **Subject Knowledge and Pedagogy: Curriculum Studies and Pathway** | **Professional Studies** |
| 4.1 Effective teaching can transform pupils’ knowledge, capabilities and beliefs about learning. | Educational TheoryCurriculum DesignChild Development | **English:** Planning as an iterative and recursive process with reflection at its core, planning creatively for pupil progress using CLPE guidelines and our SSP scheme of work**Mathematics:** Designing learning activities and devising key questions to ask during lessons**Science:** Planning to facilitate children working scientifically and how they learn to become independent young scientists**Art:** effective teaching is underpinned by good subject, pedagogical and curriculum knowledge**Computing:****Design and Technology:****Humanities:** Understanding of worldviews and impact of these on learning and definitions of knowledge.**Modern Languages:** Planning models; PPP and MMM (moving learners from dependence towards independence**Music:** Promote a love and curiosity of music by exploring performing, listening, reviewing and evaluating. Understand and explore how music is created, produced and communicated. Explore cross-curricular links between music and other areas of the curriculum**PE:** Strong teacher subject knowledge facilitates effective teaching and pupils’ learning in PE. **Mathematics Pathway:*** Conceptual Understanding
* Mathematical rich resources
* Using of contexts
 | **Purpose of Education** - Curriculum |
| 4.2 Effective teachers introduce new material in steps, explicitly linking new ideas to what has been previously studied and learned. | Educational Theory | **English:** Weekly planning, peer teaching and evaluating episodes of Systematic Synthetic Phonics; planning for guided and shared reading at KS1/2; planning for guided and shared writing at 1KS1/2. Reading assessment task,peer teaching of grammar subject knowledge**Mathematics:** Weekly planning for place value, subtraction, multiplication and divisions in KS1/2, discussing resources/textbooks and planning schemes used in schools**Science:** How to plan and deliver forensics lesson, reflection on statutory frameworks, including the NC**Art:** teacher demos are essential to effective art teaching**Computing:****Design and Technology:** scaffolded teaching essential**Humanities:** Peer teaching of one religion - careful planning and structure of the lesson, discussing planning P4C lessons. Peer teaching using Digimaps - discuss progression in mapping skills and use in school environment**Modern Languages:** Effective sequencing**Music:** Foster learning links and webs throughout practical music making **PE:** Using teacher demonstrations and modelling and collaborative/peer teaching in pairs and/or small group work.**Mathematics Pathway:*** planning mathematics lessons
* planning cultural input
* planning strategy instruction
* progression in mathematics
* the role of the subject coordinator
* technological tools in mathematics
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| 4.3 Modelling helps pupils understand new processes and ideas; good models make abstract ideas concrete and accessible. | Educational Theory | **English:** Metacognitive scripts that teachers employ when teaching shared and guided reading and writing; promoting reading and writing as meaning making activities**Mathematics:****Science:** Modelling in space, analogies in electricity, lecture on children’s learning – from concrete to abstract. **Art:** (as 4.2)**Computing: s**tarting with Scratch as a programming platform.**Design and Technology:** Modelling as 4.2**Humanities:** Enquiry model for learning.**Modern Languages:** Planning models; PPP and MMM (moving learners from dependence towards independence)**Music:** Confidently model music making and promote a deep interest and ove of the subject**PE:** Using concise and precise teacher demonstrations and modelling to enhance pupil understandings in PE.**Mathematics Pathway:*** Planning models; PPP and MMM (moving learners from dependence towards independence)
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| 4.4 Guides, scaffolds and worked examples can help pupils apply new ideas, but should be gradually removed as pupil expertise increases. | Educational Theory | **English:** Use of CLPE lesson plans from high-quality children’s literature as models to inspire independent lesson planning**Mathematics:****Science: use of models and practical experience. Learning through enquiry.** **Art:** no – in art visual exemplification and modelling is always important**Computing:****Design and Technology:** use of worked examples**.****Humanities:** Planning a sequence of geography lessons on river source to sea - accounting for progression of pupils' understanding**Modern Languages:** Planning models; PPP and MMM (moving learners from dependence towards independence)**Music:** Model confidently for the children and allow time and space for creativity and exploration in sound**PE:** Using scaffolded activities, accurate teacher demonstrations and other visual illustrations are crucial in introducing new PE knowledge, skills and ideas to pupils. **Mathematics Pathway:*** Planning models; PPP and MMM (moving learners from dependence towards independence)
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| 4.5 Explicitly teaching pupils metacognitive strategies linked to subject knowledge, including how to plan, monitor and evaluate, supports independence and academic success. | Educational TheoryCurriculum design | **English:** The importance of the metacognitive commentary to explain writing choices that teachers use when modelling writing (shared, guided) in front of pupils**Mathematics:****Science:** evaluation session at the end of seminars. Live discussions of conceptual science**Art:** importance of thinking aloud and teacher modelling of vocab etc.**Computing:****Design and Technology:** evaluating design**Humanities:****Modern Languages: L**anguage learning strategies**Music:** Encourage children to evaluate and review all aspects of their music making**PE:** Encouraging pupils to plan, perform and critically evaluate their own and others’ performances/work in PE.**Mathematics Pathway:*** Metacognition in problem solving in mathematics
 | **Learning** -Assessment for Learning |
| 4.6 Questioning is an essential tool for teachers; questions can be used for many purposes, including to check pupils’ prior knowledge, assess understanding and break down problems. | Educational Theory | **English:** Use of Barrett’s taxonomy (e.g. shared and guided reading) to develop higher order questioning skills**Mathematics:****Science:** Using children’ questions in science (a “buzz board”). Science enquiry**Art:** formative assessment requires sensitive and thoughtful teacher questioning**Computing:** active AfL, reflection in action.**Design and Technology:** questioning effective design.**Humanities:** Effective questioning in the enquiry process**Modern Languages:** Effective graded questioning**Music:** Promote high-quality questioning during practical music making to develop deeper concepts and understanding**PE:** Planning and posing questions carefully and sensitively to assess pupils’ knowledge and understandings.**Mathematics Pathway:*** Open/closed questioning
 | **Learning** - Assessment for Learning |
| 4.7 High-quality classroom talk can support pupils to articulate key ideas, consolidate understanding and extend their vocabulary. | Educational TheoryAdaptive teaching | **English:** High-quality classroom interaction is modelled in all sessions. The importance of oracy as a foundational skill. Critically examining the traditional IRF model of classroom interaction**Mathematics:****Science:**  opportunities to talk through ideas and consolidate understanding, with a focus on sound questioning modelling oracy skills.**Art:** discussing artworks and ideas is key to learning in the subject**Computing:****Design and Technology:****Humanities:** Discussions in philosophy for Children P4C session**Modern Languages:** Modelling scaffolded group and paired talk**Music:** Foster high quality opportunities for talk for learning in all aspects of practical music making. **PE:** Promoting discussion in PE is important for pupil learning.**Mathematics Pathway:*** scaffolding group talk thought thinking together approach
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| 4.8 Practice is an integral part of effective teaching; ensuring pupils have repeated opportunities to practise, with appropriate guidance and support, increases success. | Educational Theory | **English:** **Mathematics:****Science:** practical experience and practice, for instance using electrical circuits.**Art:** eg. hands-on activities are essential for haptic learning**Computing: n/a****Design and Technology:****Humanities:****Modern Languages:** Planning models (PPP and MMM)**Music:** Encourage practice and perseverance with performance and composition**PE:** Practice is crucial for successful pupil learning in PE, especially practising in pairs and/or small groups.**Mathematics Pathway:*** Planning models; PPP and MMM (moving learners from dependence towards independence)
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| 4.9 Paired and group activities can increase pupil success, but to work together effectively pupils need guidance, support and practice. | Educational TheoryAdaptive teaching | **English:** **Mathematics:****Science:** Peer teaching (human body) and peer learning (all sessions)**Art:** art making is not only an individual activity - collaborative creativity is to be encouraged**Computing:****Design and Technology:****Humanities:** Group work modelled in enquiry process**Modern Languages:** Modelling group and paired speaking, scaffolding**Music:** Foster collaboration in the making**PE:** Teacher demonstration and modelling of paired and/or small group tasks is crucial to pupil success.**Mathematics Pathway:*** pedagogy of group work
* modelling dialogic talk
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| 4.10 How pupils are grouped is also important; care should be taken to monitor the impact of groupings on pupil attainment, behaviour and motivation. | Educational TheoryAdaptive teaching | **English:** Developing an understanding of the role of groupings in the teaching of English**Mathematics:****Science:** discussion on ‘ability’ groups in science. **Art:** behavioural considerations are important eg. re. health and safety**Computing: n/a****Design and Technology:****Humanities:** Group work in enquiry process**Modern Languages:****Music:** Foster collaboration in the making**PE:** Developing an understanding of the purpose, role and practical application of group work in the teaching of PE.**Mathematics Pathway:*** KS2/3 transition
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| 4.11 Homework can improve pupil outcomes, particularly for older pupils, but it is likely that the quality of homework and its relevance to main class teaching is more important than the amount set. | Educational Theory | **English:** Develop an understanding of the role of parents in supporting pupils as they learn to read and write**Mathematics:****Science:** the importance of engaging with parents, carers and community.**Art:** eg. sketchbooks activities can be completed at home**Computing:****Design and Technology:****Humanities:****Modern Languages:****Music:****PE:** Encouraging meaningful homework tasks for pupils in PE (e.g. reflective tasks) and understanding the role of parents in supporting pupil learning in PE.**Mathematics Pathway:*** Resources for homework in mathematics
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| **Classroom Practice (Standard 4 – ‘Plan and teach well-structured lessons’)** |
| **Learn how to…** | **SBW** |
| **Plan effective lessons, by:*** Observing how expert colleagues break tasks down into constituent components when first setting up independent practice (e.g., using tasks that scaffold pupils through meta-cognitive and procedural processes) and deconstructing this approach.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Using modelling, explanations, and scaffolds, acknowledging that novices need more structure early in a domain.
* Enabling critical thinking and problem solving by first teaching the necessary foundational content knowledge.
* Removing scaffolding only when pupils are achieving a high degree of success in applying previously taught material.
* Providing sufficient opportunity for pupils to consolidate and practise applying new knowledge and skills.

**Make good use of expositions, by:*** Discussing and analysing with expert colleagues how to use concrete representation of abstract ideas (e.g. making use of analogies, metaphors, examples and non-examples).

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Starting expositions at the point of current pupil understanding.
* Combining a verbal explanation with a relevant graphical representation of the same concept or process, where appropriate.

**Model effectively, by:*** Discussing and analysing with expert colleagues how to make the steps in a process memorable and ensuring pupils can recall them (e.g. naming them, developing mnemonics, or linking to memorable stories).

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Narrating thought processes when modelling to make explicit how experts think (e.g. asking questions aloud that pupils should consider when working independently and drawing pupils’ attention to links with prior knowledge).
* Exposing potential pitfalls and explaining how to avoid them.

**Stimulate pupil thinking and check for understanding, by:*** Discussing and analysing with expert colleagues how to consider the factors that will support effective collaborative or paired work (e.g. familiarity with routines, whether pupils have the necessary prior knowledge and how pupils are grouped).
* Receiving clear, consistent and effective mentoring in how to provide scaffolds for pupil talk to increase the focus and rigour of dialogue.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Planning activities around what you want pupils to think hard about.
* Including a range of types of questions in class discussions to extend and challenge pupils (e.g. by modelling new vocabulary or asking pupils to justify answers).
* Providing appropriate wait time between question and response where more developed responses are required.
 | Trainees use the Exeter Model training tools, in conjunction with consistent and effective mentoring from their LEAD MENTOR and REFLECTIVE MENTOR, to build on the expert input provided by the ‘Learn That…’ aspects of the curriculum to meet the ‘Learn how to…’ aspects at a pace and in a sequence that suits their individual needs.*Challenging the Gap Framework Task**ML Framework Task**PE Framework Task**Mathematics Framework Task* |

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| **Adaptive Teaching (Standard 5 – ‘Adapt teaching’)** |
| **Learn that…** | **Education and Professional Studies** | **Subject Knowledge and Pedagogy: Curriculum Studies and Pathway** | **Professional Studies** |
| 5.1 Pupils are likely to learn at different rates and to require different levels and types of support from teachers to succeed. | Child DevelopmentSENDEALAddressing issues of gender and social inequalityPreparing to teach pupils from all backgroundsSeminar Day 3 - ‘Adaptive Teaching’ | **English:** Inclusive pedagogy modelled through rich and diverse literacy environments, including provision of human and non-human resources (including Mantra Lingua, Barrington Stoke, Tamarind Books).**Mathematics:** Inclusive practiced modelled in mathematics sessions by differentiating activities. Information provided for mathematics teaching for various educational needs**Science:** Peer teaching to support all abilities**Art**: eg. practical considerations highlighted in demonstrations**Computing:****Design and Technology:****Humanities:** Inclusive practice modelled in geography sessions on world connections and prior knowledge. ‘Adapting to all pupils’ thread throughout the module with easily accessible resources and engaging interactive activities employed**Modern Languages:** ML inclusive pedagogy, language learning theory**Music:** Encourage children to explore the musical world around them**PE:** Inclusive practices modelled in PE.**Mathematics Pathway:*** Connective model of teaching in mathematics
 | Adaptation To Needs and Contexts: Policies for Meeting Individual Needs |
| 5.2 Seeking to understand pupils’ differences, including their different levels of prior knowledge and potential barriers to learning, is an essential part of teaching. | Child DevelopmentSENDEALAddressing issues of gender and social inequalityPreparing to teach pupils from all backgroundsSeminar Day 3 - ‘Adaptive Teaching’ | **English:** Reading assessment task: reflecting on the importance of pitching books to pupils' instruction level of reading**Mathematics:** Investigating pupils' misconceptions in maths, discussions how to support learning of mathematics for particular needs **Science:** individual confidences self-assessed in audit & action plan. Lesson build on prior knowledge. **Art:** individual interests and capabilities should be carefully considered**Computing:****Design and Technology:****Humanities:** Assessing pupil’s prior knowledge, ethno-knowledge, and building on this within humanities, enabling access to all regardless of background.**Modern Languages:** Understanding barriers to learning in ML**Music:** Explore how to differentiate appropriately, using approaches which enable all pupils to be taught music effectively**PE:** Understanding and celebrating individual pupil interests, differences and capabilities.**Mathematics Pathway:*** Understanding barriers to learning in mathematics
 | Adaptation To Needs and Contexts: Policies for Meeting Individual Needs |
| 5.3 Adapting teaching in a responsive way, including by providing targeted support to pupils who are struggling, is likely to increase pupil success. | Child DevelopmentSENDEALAddressing issues of gender and social inequalityPreparing to teach pupils from all backgroundsSeminar Day 3 - ‘Adaptive Teaching’ | **English:** Adapting lessons ‘in the moment’ in order to respond to pupils’ misconceptions or developmental need**Mathematics:****Science:** Inclusive education demonstrated in practical situations**Art:** teacher observation is central to adaptive and responsive teaching**Computing:****Design and Technology:****Humanities:** Adapting lessons to support and challenge learners**Modern Languages:** Adapting lessons to support and challenge learners**Music:** Promote inclusive practical work**PE:** Adapting lessons to support and challenge learners.**Mathematics Pathway:*** Understanding adaptive teaching and targeted support in mathematics
 | Adaptation To Needs and Contexts: Policies for Meeting Individual Needs |
| 5.4 Adaptive teaching is less likely to be valuable if it causes the teacher to artificially create distinct tasks for different groups of pupils or to set lower expectations for particular pupils. | Child DevelopmentSENDEALAddressing issues of gender and social inequalityPreparing to teach pupils from all backgroundsSeminar Day 3 - ‘Adaptive Teaching’ | **English:** Ensuring that teacher modelling and scaffolding is linked to pupils’ need**Mathematics:****Science:** modelling AfL and setting challenges where needed.**Art:** adaptation is more likely to be by expectations of outcome **-** eg use of levels of challenge: must, should, could**Computing:** differentiated by outcome.**Design and Technology:****Humanities:** Reflect on practice - what the trainees have seen and examples of good practice shared in each group**Modern Languages:** scaffolding in ML**Music:** Allow children to work independently and creatively**PE:** Ensuring that teacher demonstrations and modelling and scaffolding of pupil activities meet pupil needs.**Mathematics Pathway:*** Adaptive teaching, scaffolding
 | Adaptation To Needs and Contexts: Policies For Meeting Individual Needs |
| 5.5 Flexibly grouping pupils within a class to provide more tailored support can be effective, but care should be taken to monitor its impact on engagement and motivation, particularly for low attaining pupils. | Child DevelopmentSENDEALAddressing issues of gender and social inequalityPreparing to teach pupils from all backgroundsSeminar Day 3 - ‘Adaptive Teaching’ | **English:****Mathematics:****Science:****Art:** pupil groupings can be made for various reasons – should be flexible**Computing:****Design and Technology:****Humanities:****Modern Languages:****Music:** Plan for a variety of grouping for learning during practical music**PE:** Ensuring that pupils are grouped in PE according to their diverse needs and interests and no more than 4 in each group.**Mathematics Pathway:*** KS2/3 transition
 | Adaptation To Needs and Contexts: Policies for Meeting Individual Needs |
| 5.6 There is a common misconception that pupils have distinct and identifiable learning styles. This is not supported by evidence and attempting to tailor lessons to learning styles is unlikely to be beneficial. | Child DevelopmentEducational TheorySENDEALAddressing issues of gender and social inequalityPreparing to teach pupils from all backgroundsSeminar Day 3 - ‘Adaptive Teaching’ | **English:** Critically examining the myth of learning styles**Mathematics:****Science:** modelling multi-modal methods.**Art:** eg.the visual domain is powerful in communication, not only in art**Computing:****Design and Technology:****Humanities:****Modern Languages:** oracy, literacy**Music:** Explore and address misconceptions throughout practical work**PE:** Critically discussing and debating learning styles.**Mathematics Pathway:*** Task design for differentiation in mathematics
* Use of resources and technological tools
 | Adaptation To Needs and Contexts: Policies for Meeting Individual Needs |
| 5.7 Pupils with special educational needs or disabilities are likely to require additional or adapted support; working closely with colleagues, families and pupils to understand barriers and identify effective strategies is essential. | Child DevelopmentSENDEALAddressing issues of gender and social inequalityPreparing to teach pupils from all backgroundsSeminar Day 3 - ‘Adaptive Teaching’ | **English:** Adapting pedagogy according to pupils’ needs. Collaboration with parents and other agencies where necessary to set long-term goals and expectations**Mathematics:****Science:** **Art:** consideration should always be made of pupils’ needs**Computing:****Design and Technology:****Humanities:****Modern Languages:****Music:** Promote inclusive practical work for all children**PE:** Adapting teaching to individual pupil needs in PE.**Mathematics Pathway:*** Adaptive teaching in mathematics
 | Adaptation To Needs and Contexts: Policies for Meeting Individual Needs |

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| **Adaptive Teaching (Standard 5 – ‘Adapt teaching’)** |
| **Learn how to…** | **SBW** |
| **Develop an understanding of different pupil needs, by:*** Receiving clear, consistent and effective mentoring in supporting pupils with a range of additional needs, including how to use the SEND Code of Practice, which provides additional guidance on supporting pupils with SEND effectively.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Identifying pupils who need new content further broken down.
* Making use of formative assessment.
* Working closely with the Special Educational Needs Co-ordinator (SENCO) and special education professionals and the Designated Safeguarding Lead (DSL) under supervision of expert colleagues.

**Provide opportunity for all pupils to experience success, by:*** Observing how expert colleagues adapt lessons, whilst maintaining high expectations for all, so that all pupils have the opportunity to meet expectations and deconstructing this approach.
* Discussing and analysing with expert colleagues how to balance input of new content so that pupils master important concepts.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Making effective use of teaching assistants and other adults in the classroom under supervision of expert colleagues.
* Meet individual needs without creating unnecessary workload, by:
* Discussing and analysing with expert colleagues how they decide whether intervening within lessons with individuals and small groups would be more efficient and effective than planning different lessons for different groups of pupils.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Making use of well-designed resources (e.g. textbooks).
* Planning to connect new content with pupils' existing knowledge or providing additional pre-teaching if pupils lack critical knowledge
* Building in additional practice or removing unnecessary expositions.
* Reframing questions to provide greater scaffolding or greater stretch.

**Group pupils effectively, by:*** Discussing and analysing with expert colleagues how the placement school changes groups regularly, avoiding the perception that groups are fixed.
* Discussing and analysing with expert colleagues how the placement school ensures that any groups based on attainment are subject specific.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Applying high expectations to all groups, and ensuring all pupils have access to a rich curriculum.
 | Trainees use the Exeter Model training tools, in conjunction with consistent and effective mentoring from their LEAD MENTOR and REFLECTIVE MENTOR, to build on the expert input provided by the ‘Learn That…’ aspects of the curriculum to meet the ‘Learn how to…’ aspects at a pace and in a sequence that suits their individual needs.*Challenging the Gap Framework Task**SEND Framework Task**EAL Framework Task* |

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| **Assessment (Standard 6 – ‘Make accurate and productive use of assessment’)** |
| **Learn that…** | **Education and Professional Studies** | **Subject Knowledge and Pedagogy: Curriculum Studies and Pathway** | **Professional Studies** |
| 6.1 Effective assessment is critical to teaching because it provides teachers with information about pupils’ understanding and needs. | **Assessment** | **English:** Assessment for learning via questioning and diagnostic marking; how this feeds into planning. Understanding NC terms of assessment**Mathematics:** Assessment for learning via questioning, analysing pupils' misconceptions, evaluating problem solving strategies**Science:** Scientific 'buzz board' to assess children's prior knowledge and learning**Art:** emphasis on process - formative assessment opportunities**Computing:** AfL in practice**Design and Technology:** importance of feedback during making/designing process.**Humanities:** Assessment with peer teaching and examples provided**Modern Languages:** assessing the 4 skills**Music:** Explore the use of formative and summative assessment in music to secure pupils’ progress**PE:** Assessment for learning and assessment of learning using formative assessment (peer assessment) and summative assessment (pre & post pupil assessment).**Modern Languages Pathway:*** assessment and planning for progression in MFL
* KS2/3 transition
 | **Learning:** Assessment for LearningExpectationsand Target Setting |
| 6.2 Good assessment helps teachers avoid being over-influenced by potentially misleading factors, such as how busy pupils appear. | **Assessment** | **English:** Use of high-quality questioning to assess pupils’ progress and suitability/pitch of activities**Mathematics:****Science:** motivate using exciting and pertinent lessons and content. Assess through multiple means, for instance concept maps for Earth and Space.**Art:** assessment in art is ongoing and supported by careful documentation**Computing:****Design and Technology:****Humanities:** Enquiry process group work enabling all to participate.**Modern Languages:****Music:** Involve the children in the assessment process and refinement and practice of ideas and concepts. Draw on AfL principles.**PE:** Engaging pupils as well as the teachers in the assessment process (e.g. peer assessment).**Mathematics Pathway:*** assessment and planning for progression in mathematics
* KS2/3 transition
 | **Learning:** Assessment for LearningExpectationsand Target Setting |
| 6.3 Before using any assessment, teachers should be clear about the decision it will be used to support and be able to justify its use. | **Assessment** **Curriculum design** | **English:** Reading assessment task: providing reading materials which match pupils' interests, abilities and cognitive understanding**Mathematics:****Science:** Assessing understanding through questioning; addressing misconceptions, checking understanding; use of concept maps**Art:** assessment should be linked to learning intentions**Computing:****Design and Technology:****Humanities:** Use of questioning to assess pupils understanding and reveal ethno-knowledge.**Modern Languages:****Music:**  Link assessment to short and medium term planning**PE:** Assessment in PE is always linked to the pupil learning objectives.**Mathematics Pathway:*** assessment and planning for progression in mathematics
* KS2/3 transition
 | **Learning:** Assessment for LearningExpectationsand Target Setting |
| 6.4 To be of value, teachers use information from assessments to inform the decisions they make; in turn, pupils must be able to act on feedback for it to have an effect. | **Assessment** | **English:** Written and oral feedback to pupils during lessons; providing time in lessons for pupils to engage with feedback**Mathematics:** Exploring pupils' attainments in SATs tests, effective questioning for higher order thinking in maths**Science:** written and oral feedback – in particular for peer teaching.**Art:** dispel myth that ‘you are either good or not good at art’ - pupils need to know how to improve through teacher, peer and self-evaluation**Computing:****Design and Technology:****Humanities:****Modern Languages:****Music:** Encourage the children to talk about their own work and achievements in practicalwork. **PE:** Written and oral feedback (positive & specific/corrective) to pupils during lessons and providing time for them to act on the feedback given.**Mathematics Pathway:*** assessment and planning for progression in mathematics
* KS2/3 transition
 | **Learning:** Assessment for LearningExpectationsand Target Setting |
| 6.5 High-quality feedback can be written or verbal; it is likely to be accurate and clear, encourage further effort, and provide specific guidance on how to improve. | **Assessment** | **English:** Ensuring that written feedback is legible and clear; providing time in lessons for pupils to engage with feedback**Mathematics:****Science:** this also includes discourse on pupils drawings, floorbooks, artwork.**Art:** eg. purposeful dialogue in the art classroom is central to learning **Computing:****Design and Technology:****Humanities:** marking against humanities criteria rather than purely literacy.**Modern Languages:****Music:** Use innovative ways to assess practical music making. Such as video, sound recording and web-based technologies**PE:** Dialogic feedback to pupils on their performances/work is crucial to their learning.**Mathematics Pathway:*** assessment and planning for progression in mathematics
* KS2/3 transition
 | **Learning:** Assessment for LearningExpectationsand Target Setting |
| 6.6 Over time, feedback should support pupils to monitor and regulate their own learning. | **Assessment** | **English:** High-quality modelling of classroom interaction, including giving and receiving peer-to-peer feedback; providing time for this in plenaries**Mathematics:****Science:****Art:** older pupils can take more responsibility for their learning – eg research work to inform making**Computing:****Design and Technology:****Humanities:** questioning employed to assist pupils’ development.**Modern Languages:** Language learning strategies**Music:** Involve the children in our specs of the assessment process.**PE:** Developing pupil autonomy and independence through teacher and pupil feedback.**Mathematics Pathway:*** assessment and planning for progression in mathematics
* KS2/3 transition
 | **Learning:** Assessment for LearningExpectationsand Target Setting |
| 6.7 Working with colleagues to identify efficient approaches to assessment is important; assessment can become onerous and have a disproportionate impact on workload. | **Assessment** | **English:** Taking agency of learning about assessment; proactive participation in class/year-group moderation of pupils’ work**Mathematics:****Science:** creative assessment in science, for instance using floorbooks or artwork**Art:** expectations should be high for all learners, with consistently appropriate standards across the school (clear progression)**Computing:****Design and Technology:****Humanities:****Modern Languages:****Music:** Ensure assessment is manageable, practical and appropriate.**PE:** Meaningful discussions with fellow teachers about the relevance, setting, marking, feedback and moderation of pupil assessed work in PE.**Mathematics Pathway:*** assessment and planning for progression in mathematics
* KS2/3 transition
 | **Learning:** Assessment for LearningExpectationsand Target Setting |
| **Assessment (Standard 6 – ‘Make accurate and productive use of assessment’)** |
| **Learn how to…** | **SBW** |
| **Avoid common assessment pitfalls, by:*** Discussing and analysing with expert colleagues how to plan formative assessment tasks linked to lesson objectives and think ahead about what would indicate understanding (e.g. by using hinge questions to pinpoint knowledge gaps).
* Discussing and analysing with expert colleagues how to choose, where possible, externally validated materials, used in controlled conditions when required to make summative assessments.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Drawing conclusions about what pupils have learned by looking at patterns of performance over a number of assessments with support and scaffolding from expert colleagues (e.g. appreciating that assessments draw inferences about learning from performance).
* Check prior knowledge and understanding during lessons, by:
* Receiving clear, consistent and effective mentoring in how to structure tasks and questions to enable the identification of knowledge gaps and misconceptions (e.g. by using common misconceptions within multiple-choice questions).

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Using assessments to check for prior knowledge and pre-existing misconceptions.
* check that a correct answer stems from secure understanding.
* Monitoring pupil work during lessons, including checking for misconceptions.

**Provide high-quality feedback, by:*** Discussing and analysing with expert colleagues how pupils’ responses to feedback can vary depending on a range of social factors (e.g. the message the feedback contains or the age of the child).
* Receiving clear, consistent and effective mentoring in how to scaffold self-assessment by sharing model work with pupils, highlighting key details.
* Discussing and analysing with expert colleagues how to ensure feedback is specific and helpful when using peer- or self-assessment.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Focusing on specific actions for pupils and providing time for pupils to respond to feedback.
* Make marking manageable and effective, by:
* Receiving clear, consistent and effective mentoring in how to record data only when it is useful for improving pupil outcomes.
* Discussing and analysing with expert colleagues to develop an understanding that written marking is only one form of feedback.
* Discussing and analysing with expert colleagues how to identify efficient approaches to marking and alternative approaches to providing feedback (e.g. using whole class feedback or well supported peer- and self-assessment) and deconstructing this approach.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Using verbal feedback during lessons in place of written feedback after lessons where possible.
* Reducing the opportunity cost of marking (e.g. by using abbreviations and codes in written feedback).
* Prioritising the highlighting of errors related to misunderstandings, rather than careless mistakes when marking.
 | Trainees use the Exeter Model training tools, in conjunction with consistent and effective mentoring from their LEAD MENTOR and REFLECTIVE MENTOR, to build on the expert input provided by the ‘Learn That…’ aspects of the curriculum to meet the ‘Learn how to…’ aspects at a pace and in a sequence that suits their individual needs. |

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| **Managing Behaviour (Standard 7 – ‘Manage behaviour effectively’)** |
| **Learn that…** | **Education and Professional Studies** | **Subject Knowledge and Pedagogy: Curriculum Studies and Pathway** | **Professional Studies** |
| 7.1 Establishing and reinforcing routines, including through positive reinforcement, can help create an effective learning environment. | Child DevelopmentBehaviour | **English:** Appropriate classroom behaviour modelled by tutors. Health and safety, risk assessment and BM implications for less formal practice, e.g. role play, storytelling, performance poetry**Mathematics:** Modelled by tutors, e.g. resource management, transitions from one activity to another, etc.**Science:** Risk assessment and safe boundaries inside and outside of the classroom**Art:** Appropriate classroom and behaviour management constantly modelled, including essential health and safety considerations**Computing:****Design and Technology:** risk assessment and safe boundaries**Humanities:** Modelled by tutors - e.g. emphasis on using artefacts - handling especially with difference between RE and Historical artefacts. Discussion on fieldtrips and use of resources on tables**Modern Languages:** Target language for classroom routines.**Music:** Foster high expectations for behaviour in practical music making and explore how best to do this when teaching whole class, small groups and individual children**PE:** Appropriate classroom and pupil behaviour modelled by tutors (e.g. rules & routines). **Mathematics Pathway:*** Motivation and behaviour
 | **Learning** - Behaviour and Classroom Management |
| 7.2 A predictable and secure environment benefits all pupils but is particularly valuable for pupils with special educational needs. | Child DevelopmentBehaviourSEND | **English:** Appropriate classroom behaviour modelled by tutors; the importance of valuing contributions from all pupils, regardless of learning need**Mathematics:****Science:** the importance of feeling safe and secure enough to enquire and explore freely.**Art:** the art classroom should support wellbeing for all**Computing:****Design and Technology:** **Humanities:** creating a safe environment respecting all.**Modern Languages:****Music:** Foster a positive and safe environment for practical music. Children are encouraged to explore and work creatively. **PE:** Appropriate classroom and pupil behaviour modelled by tutors (e.g. rules & routines).**Mathematics Pathway:*** Adaptive teaching in mathematics
* Behaviour and classroom management
 | L**earning** - Behaviour and Classroom Management**Welfare** - Safeguarding and Pastoral Systems |
| 7.3 The ability to self-regulate one’s emotions affects pupils’ ability to learn, success in school and future lives. | Child DevelopmentBehaviour | **English:** The importance of literature to develop pupils’ empathy for and understanding of groups other than themselves**Mathematics:****Science:** promoting exploratory discourse**Art:** art making can be a valuable outlet for emotion and a good way to understand others**Computing:****Design and Technology:** **Humanities:****Modern Languages:** Language learning strategies, affective filter**Music:** Promote positive values **PE:** Promoting pupil self-confidence, self-esteem and self-control in PE.**Mathematics Pathway:*** Adaptive teaching in mathematics
* Behaviour and classroom management
* Mathematical anxiety
 | **Learning** - Behaviour and Classroom Management |
| 7.4 Teachers can influence pupils’ resilience and beliefs about their ability to succeed, by ensuring all pupils have the opportunity to experience meaningful success. | Child DevelopmentBehaviourEducational Theory | **English:** The importance of a diverse language and literature-rich curriculum which speaks to pupils’ lives and in which they feel seen**Mathematics:****Science:** a significant amount of achievable challenge, emerging from real life issues (the climate crisis, for instance)**Art:** all activities should balance challenge with achievable objectives**Computing:** celebrating each other’s work**Design and Technology:** **Humanities:** use of authentic praise for humanities skills developed and knowledge not only retained but employed.**Modern Languages:** Language learning strategies, modelling confidence and curiosity in ML, planning**Music:** Provide opportunities for performance for all learners**PE:** Encouraging pupils in PE to be positive, be fair, to know what’s right and wrong and how to cope with winning and losing/success and failure. **Mathematics Pathway:*** Motivation and behaviour
* KS2/3 transition
* Growth mind set in mathematics
 | **Learning** - Behaviour and Classroom Management |
| 7.5 Building effective relationships is easier when pupils believe that their feelings will be considered and understood. | Child DevelopmentBehaviour | **English:** Literature as empathy**Mathematics:****Science: l**ooking through children’s eyes (Buzz board) and a humanist grounding.**Art:** affective dimension to learning in the subject is as important as effective**Computing:****Design and Technology:** **Humanities:** Modelled in P4C session.**Modern Languages:** modelling confidence, resilience and curiosity in ML**Music:** Explore children's music**PE:** Understanding pupils (e.g. interests, limitations etc) and how they think and learn in PE.**Mathematics Pathway:*** Motivation and behaviour
* Mathematical anxiety
* Growth mind set
 | **Learning** - Behaviour and Classroom Management**Welfare** - Safeguarding and Pastoral Systems |
| 7.6 Pupils are motivated by intrinsic factors (related to their identity and values) and extrinsic factors (related to reward). | Child DevelopmentBehaviour | **English:** Garnering pupils’ interests by offering them a curriculum in which they feel valued and seen**Mathematics:****Science:** grounding science in real-life issues, that matter to children.**Art:** the art curriculum should be inclusive and inviting for all**Computing:****Design and Technology:** **Humanities:** Building on the pupils’ interest – setting up the enquiry questions.**Modern Languages:** culture, modelling confidence, resilience and curiosity in ML**Music:** Music important to you**PE:** Planning engaging, interactive and inspiring lessons that motivate pupils to learn in PE.**Mathematics Pathway:*** Motivation and behaviour
* Mathematical anxiety
* Growth mind set
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| 7.7 Pupils’ investment in learning is also driven by their prior experiences and perceptions of success and failure. | Child DevelopmentBehaviourEducational TheoryAddressing issues of gender and social inequality | **English:** Explicitly valuing pupils’ ethno-knowledge to create a safe and stimulating learning environment**Mathematics:****Science:** nurturing a confidence and excitement about science; an appreciation of where science might take us. **Art:** creating a positive attitude to the subject and a ‘can do’ disposition**Computing:****Design and Technology:** **Humanities:** Valuing ethno-knowledge enables pupils’ to feel included and creates safe environment which builds on failures and celebrates successes.**Modern Languages:** culture, modelling confidence, resilience and curiosity in ML**Music:** Promote a love for music.**PE:** Encouraging a positive attitude, self-confidence and a love of learning in PE. **Mathematics Pathway:*** Motivation and behaviour
* Mathematical anxiety
* Growth mind set
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| **Managing Behaviour (Standard 7 – ‘Manage behaviour effectively’)** |
| **Learn how to…** | **SBW** |
| **Develop a positive, predictable and safe environment for pupils, by:*** Receiving clear, consistent and effective mentoring in how to respond quickly to any behaviour or bullying that threatens emotional safety.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Establishing a supportive and inclusive environment with a predictable system of reward and sanction in the classroom.
* Working alongside colleagues as part of a wider system of behaviour management (e.g. recognising responsibilities and understanding the right to assistance and training from senior colleagues).
* Giving manageable, specific and sequential instructions.
* Checking pupils’ understanding of instructions before a task begins.
* Using consistent language and non-verbal signals for common classroom directions.
* Using early and least-intrusive interventions as an initial response to low level disruption.

**Establish effective routines and expectations, by:*** Discussing and analysing with expert colleagues how routines are established at the beginning of the school year, both in classrooms and around the school.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Creating and explicitly teaching routines in line with the school ethos that maximise time for learning (e.g. setting and reinforcing expectations about key transition points).
* Reinforcing established school and classroom routines

**Build trusting relationships, by:*** Discussing and analysing with expert colleagues effective strategies for liaising with parents, carers and colleagues to better understand pupils’ individual circumstances and how they can be supported to meet high academic and behavioural expectations.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Responding consistently to pupil behaviour.
* Engaging parents, carers and colleagues with support (e.g. discussing a script) from expert colleagues and mentors both in formal and informal settings.

**Motivate pupils, by:*** Observing how expert colleagues support pupils to master challenging content, which builds towards long-term goals and deconstructing this approach.
* Discussing and analysing with expert colleagues how experienced colleagues provide opportunities for pupils to articulate their long-term goals and helping them to see how these are related to their success in school.
* Discussing and analysing with expert colleagues how to support pupils to journey from needing extrinsic motivation to being motivated to work intrinsically.
 | Trainees use the Exeter Model training tools, in conjunction with consistent and effective mentoring from their LEAD MENTOR and REFLECTIVE MENTOR, to build on the expert input provided by the ‘Learn That…’ aspects of the curriculum to meet the ‘Learn how to…’ aspects at a pace and in a sequence that suits their individual needs. |

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| **Professional Behaviours (Standard 8 – ‘Fulfil wider professional responsibilities’)** |
| **Learn that…** | **Education and Professional Studies** | **Subject Knowledge and Pedagogy: Curriculum Studies and Pathway** | **Professional Studies** |
| 8.1 Effective professional development is likely to be sustained over time, involve expert support or coaching and opportunities for collaboration. | The Exeter Model | **English:** The importance of being proactive in learning about school marking and other assessment procedures, planning expectations, and use of other adults. The importance of collaborative teamwork**Mathematics: Mathematics Framework Task, e**ncouraging teamwork by using thinking together approaches, importance of being proactive**Science:** developing a scientific community of practice, the importance our own scientific culture and understanding. Encouragement of CPD, and in particular, evidence-based CPD.**Art:** further opportunities for CPD in the subject should be taken up whenever and wherever possible – eg. encouraging partnership projects with artists/ galleries**Computing:** links to CAS and other computing associations.**Design and Technology:** **Humanities:** Encourage teamwork - modelled in peer teaching - build on each other's and pupils' prior learning. Emphasis on ethno-knowledge of all staff and pupils as a resource for the Humanities**Modern Languages:** **Music: P**ractice, rehearse, refine, evaluate.**PE: PE Framework Task**, encouraging CPD-led activities (e.g. attending accredited short courses, collaborative/peer teaching with experts such as subject leads, sports coaches and/or PE teachers). **Mathematics Pathway:*** Preparing for the role of Subject Lead
 | **Being a Teacher** - Continuing Professional Development |
| 8.2 Reflective practice, supported by feedback from and observation of experienced colleagues, professional debate, and learning from educational research, is also likely to support improvement. | The Exeter Model Being a TeacherProfessionalism and Researchful PracticeMasters level practice | **English:** Giving and receiving peer feedback in peer-taught sessions**Mathematics:****Science:** reflection is a key part of the course in general. Specifically science is reflected upon in journals after seminars and peer-teaching.**Art:** reflection and evaluation skills underpin learning for teachers as well as pupils**Computing:****Design and Technology:** **Humanities:** Peer teaching feedback given.**Modern Languages:****Music:** Develop professional relationships with visiting musicians and know how best to draw on advice and support from specialist teachers**PE:** Collaborative/peer teaching with experts such as subject leads, sports coaches and/or PE teachers).**Mathematics Pathway:*** Mathematics Pathway assignment
* Designing problem solving booklet
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| 8.3 Teachers can make valuable contributions to the wider life of the school in a broad range of ways, including by supporting and developing effective professional relationships with colleagues. | The Exeter Model Being a TeacherProfessionalism and Researchful Practice | **English:** An introduction to drama and how it might be used to enrich the wider life of the school**Mathematics:****Science:** developing a community of practice**Art:** Encouragement to connect to school and local community to enhance art learning opportunities**Computing:****Design and Technology:** **Humanities:** Local area – build on historical, geographical and religious elements of locality of the school.**Modern Languages:****Music:** Promote extracurricular musicial activity - make links to classroom learning**PE:** Promoting and leading extra-curricular activities (e.g. in various games such as football, touch rugby, netball etc; athletics, dance etc) and inviting colleagues and parents to lead various activities.**Mathematics Pathway:*** Preparing for the role of Subject Lead
 | **Being a Teacher** - Employment |
| 8.4 Building effective relationships with parents, carers and families can improve pupils’ motivation, behaviour and academic success. |  | **English:** Offering a curriculum which values and celebrates the lives and tradition of pupils’ families **Mathematics:****Science:** Emphasising home-school links to promote learning**Art:** eg. projects can bridge the home-school divide - parents learning alongside pupils**Computing:****Design and Technology:** **Humanities:** Links with home encouraged as sources of ethno-knowledge.**Modern Languages:****Music:** Draw on the support of musical parents**PE:** Encouraging strong teacher-parent relationships to support pupil learning. **Mathematics Pathway:*** Assessment in Mathematics
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| 8.5 Teaching assistants (TAs) can support pupils more effectively when they are prepared for lessons by teachers, and when TAs supplement rather than replace support from teachers. | Reflecting on classroom practice: working with TAs SEND  | **English:** An introduction to some key English intervention programmes and how they might be delivered by a TA**Mathematics:****Science:** using TA support to help with resources and assessment.**Art:** adequate preparation of resources is essential and TAs can help with this**Computing:****Design and Technology:** **Humanities:** Use of TAs to support enquiry lessons.**Modern Languages:****Music:** Draw on the support of musical TAs**PE:** Involving TAs in the planning and teaching of PE lessons to support pupil learning.**Mathematics Pathway:*** SEND and mathematics
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| 8.6 SENCOs, pastoral leaders, careers advisors and other specialist colleagues also have valuable expertise and can ensure that appropriate support is in place for pupils. | SENDBeing a TeacherProfessionalism and Researchful Practice | **English:** Drawing on the expertise of others to gain insight and plan for specific learning needs**Mathematics:****Science:****Art:** meeting individual pupil needs, informed by all available information**Computing:****Design and Technology:** **Humanities:****Modern Languages:****Music:****PE:** Drawing upon the expertise of colleagues to inform the planning, teaching and learning of all pupils in PE.**Mathematics Pathway:*** SEND and mathematics
 | **Being a Teacher** -Employment**Welfare** - Safeguarding and Pastoral Systems |
| 8.7 Engaging in high-quality professional development can help teachers improve. | The Exeter Model Being a TeacherProfessionalism and Researchful Practice | **English:** Opportunities for engaging with resources from CLPE and UKLA**Mathematics:****Science:** using associations and CoP (e.g. ASE, PSTT)**Art:** maximising all CPD opportunities – eg drawing on NSEAD, AccessArt, Crafts Council etc.**Computing:** using associations and CoP (e.g. CAS)**Design and Technology:** **Humanities:** CPD opportunities and membership – NATRE, GA and HA advertised and encourage to the group.**Modern Languages:****Music:** Understand the importance of reflection on practice and continuing CPD in music**PE:** Exploring all CPD opportunities for development and improvement (e.g. membership of a PE/subject association, attending accredited PE-related short courses, postgraduate study etc).**Mathematics Pathway:*** Preparing for your ECT years
 | **Welfare** - Safeguarding and Pastoral Systems |

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| **Professional Behaviours (Standard 8 – ‘Fulfil wider professional responsibilities’)** |
| **Learn how to…** | **SBW** |
| **Develop as a professional, by:*** Receiving clear, consistent and effective mentoring in how to engage in professional development with clear intentions for impact on pupil outcomes, sustained over time with built-in opportunities for practice.
* Receiving clear, consistent and effective mentoring on the duties relating to Part 2 of the Teachers’ Standards.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Strengthening pedagogical and subject knowledge by participating in wider networks.
* Learning to extend subject and pedagogic knowledge as part of the lesson preparation process.
* Seeking challenge, feedback and critique from mentors and other colleagues in an open and trusting working environment.
* Reflecting on progress made, recognising strengths and weaknesses and identifying next steps for further improvement.
* Engaging critically with research and using evidence to critique practice.

**Build effective working relationships, by:*** Discussing and analysing with expert colleagues how experienced colleagues seek ways to support individual colleagues and working as part of a team.
* Observing how expert colleagues communicate with parents and carers proactively and make effective use of parents’ evenings to engage parents and carers in their children’s schooling and deconstructing this approach.
* Receiving clear, consistent and effective mentoring in how to work closely with the SENCO and other professionals supporting pupils with additional needs, including how to make explicit links between interventions delivered outside of lessons with classroom teaching.
* Discussing with mentor and expert colleagues how to share the intended lesson outcomes with teaching assistants ahead of lessons.
* Receiving clear, consistent and effective mentoring in how to ensure that support provided by teaching assistants in lessons is additional to, rather than a replacement for, support from the teacher.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Contributing positively to the wider school culture and developing a feeling of shared responsibility for improving the lives of all pupils within the school (e.g. by supporting expert colleagues with their pastoral responsibilities, such as careers advice).
* Knowing who to contact with any safeguarding concerns and having a clear understanding of what sorts of behaviour, disclosures and incidents to report.
* Preparing teaching assistants for lessons under supervision of expert colleagues.

**Manage workload and wellbeing, by:*** Observing how expert colleagues use and personalise systems and routines to support efficient time and task management and deconstructing this approach.
* Discussing and analysing with expert colleagues the importance of the right to support (e.g. to deal with misbehaviour).
* Protecting time for rest and recovery and being aware of the sources of support available to support good mental wellbeing.

**And - following expert input - by taking opportunities to practise, receive feedback and improve at:*** Collaborating with colleagues to share the load of planning and preparation and making use of shared resources (e.g. textbooks).
 | Trainees use the Exeter Model training tools, in conjunction with consistent and effective mentoring from their LEAD MENTOR and REFLECTIVE MENTOR, to build on the expert input provided by the ‘Learn That…’ aspects of the curriculum to meet the ‘Learn how to…’ aspects at a pace and in a sequence that suits their individual needs. |

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| **Beyond the Core Content Framework** |
| **Education and Professional Studies** | **Subject Knowledge and Pedagogy** | **Professional Studies** |
| Child protection and safeguardingSeminar Day 4: Prevent and British ValuesLeadershipMasters level writing: reviewing and critiquing the literature.Professional and researchful practiceBeing a teacher*Interpreting Data Task**Optional Leadership Task**EPS Module Assignment**Pathway Assignment* | **English:** Centrality of offering a curriculum which represents and is inclusive to learners from all backgrounds, including contexts of minority diversity and EAL**Mathematics:****Science:** to consider scientific values and how these vary around the world.**Art:** To understand other cultures and explore complex questions**Computing:****Design and Technology:** **Humanities:** Examining treating others with dignity in work on global citizenship. Tolerance and respect for others particularly modelled in RE and geography. Intercultural communication - worldviews examined in RE including misconceptions and miscommunication**Modern Languages:** Intercultural understanding, modelling openness and curiosity about language and culture**Music:** To understand other cultures and explore complex questions**PE:** Understanding other cultures and treating others with respect, tolerance and dignity. **Mathematics Pathway:*** Preparing for the role of subject leader
 | **Being a Teacher** - Contractual and Legal Responsibilities |

**Core Content Framework reference list**

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| **High Expectations (Standard 1 – ‘Set high expectations’)** |
| **Reference** | **Education and Professional Studies** | **Subject Knowledge and Pedagogy** |
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| Tereshchenko, A., Francis, B., Archer, L., Hodgen, J., Mazenod, A., Taylor, B., Travers, M. C. (2018) Learners’ attitudes to mixed-attainment grouping: examining the views of students of high, middle and low attainment. Research Papers in Education, 1522, 1–20. <https://doi.org/10.1080/02671522.2018.1452962>  | Addressing Issues of Gender and Social Inequality | Curriculum Studies – general |
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| **Assessment (Standard 6 – ‘Make accurate and productive use of assessment’)** |
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