ITT Course Curriculum: Secondary PGCE Mathematics (11-16) with QTS\*

Author: Martin Pickett

AY 22/23



**How to use this ITT curriculum**

This ITT curriculum outlines what trainees on this course are expected to know and be able to do for each week they are on their ITT and the method by which trainee progression will be assessed. It is subject specific, informed by pertinent research and underpinned with the Core Content Framework and its associated evidence (as necessary for those seeking to be recommending for QTS at the conclusion of their ITT). It is sequential in its approach, mapped against the various components of the Core Content Framework and shows a purposeful integration of centre-based (university-based) learning into Professional Practice. There is no separate ‘Professional Practice’ curriculum for trainees to follow. Instead, there is one single one single curriculum which encompasses all the learning which should take place throughout the ITT course.

**If you are a trainee:** This is the curriculum you will follow each week throughout your ITT course both when you are at university and when you are on Professional Practice (these weeks are shown in orange). It provides the learning which will be delivered to you in your subject, the knowledge, and skills you will be expected to demonstrate each week and the questions which assist you, your tutor, and your mentor (during Professional Practice) in assessing if you are making progress or if further support is needed. **You need to complete every week of this curriculum to meet the necessary Standards required for QTS recommendation at the end of this course and to ensure you are able to transition into your Early Career Teaching (ECT) phase.**

**If you are a school-based expert colleague (mentor or lead):** This curriculum outlines what trainees in this subject should know and be able to do throughout their ITT. This includes the weeks when they are on Professional Practice being supported by their expert mentor (these weeks are shown in orange). There is no separate ‘Professional Practice’ curriculum, rather one single subject specific curriculum which encompasses every week of ITT allowing you to see the prior learning and what trainees can already do and understand prior to working with you. Throughout their course trainees will continue to have their learning delivered by Edge Hill colleagues (this will be online throughout Professional Practice). We ask our expert-colleagues to provide opportunities for trainees to demonstrate, practise, receive feedback, or get better at the skills which they are expected to be ‘able to do’ each week. We also ask mentors to assess the extent to which the trainee has made progress each week using the ‘key questions’ provided and completing the relevant section (2) on the Weekly Development Summary (WDS) during the weekly mentor meeting in addition to confirming on the form if the trainee is making sufficient progress. Additional support for mentors is available via the weekly communications and the [FoE mentor space.](https://sites.google.com/view/foementorspace/secondary-and-further-education/pp-paperwork)

**Rationale of curriculum coverage and sequence including use of pertinent research**

The curriculum for PGCE Secondary Mathematics ensures complete coverage of the ITT Core Content Framework and its associated evidence basis (Department for Education, 2019) as appropriate for Secondary ITT. The content contained in early sessions provides trainees with an understanding of the importance of mathematics in the curriculum including the current debates and key issues related to the subject; for example, in the way in which the teaching of mathematics for mastery programme influences much of the current thinking in mathematics education and is fundamental to curriculum design.  This knowledge of mastery for mathematics is strongly aligned to the Subject and Curriculum strand of the CCF regarding how children master foundational concepts and knowledge before moving on whilst, at the same time, this aspect of the curriculum aligns with the key ideas about How Pupils Learn as teaching for mastery reflects the importance of understanding how memory works.  Prioritising the ideas centred on teaching mathematics for mastery provides a sound base of knowledge for the trainees in readiness for appreciating the implications for the key themes of the mathematics national curriculum programmes of study; for example, an understanding of mathematical fluency and coherence directly supports and prepares trainees for the way in which mathematical thinking underpins the structure of the curriculum.  These aspects are underpinned by Hodgen et al. (2018). This broad discussion on the principles of mathematics education supports the trainees in considering the finer details of subject knowledge, specific pedagogical approaches, and an understanding of how mathematical misconceptions impact on learning and how this is linked to the curriculum (Ofsted, 2021).

* **Delivery of curriculum outcome(s) into composite and component elements**

Curriculum outcomes have been broken down into composite and component elements to aid the trainees in gaining a secure knowledge and understanding of the key learning. For example, to ensure that trainees can assess pupils’ mathematical understanding effectively, they are required to understand some of the differences in assessments, how to plan for assessment tasks, and how to use questioning as an effective tool.

* **How the curriculum enables trainees to develop their sense of social justice including the importance of inclusion and representation in their subject**

The importance of how mathematics education can support all aspects of equity, diversion and inclusion is embedded into all sessions as well as through discrete sessions. For example, in addition to sessions dedicated to content such as inclusion and colonisation, trainees are encouraged to promote a philosophy that mathematics is accessible to all pupils with positive language in every session.

* **Opportunities to revisit key learning**

Trainees routinely revisit key learning regularly throughout the programme and build on the earlier work on the curriculum to consider how pupils learn mathematics.  They gain a knowledge of a range of learning theories by being asked to consider the ways in which the teaching and learning of mathematics is influenced by key theorists.  There are strong and coherent links between this work and the subject-specific content in the earlier curriculum; for example, trainees are required to practice and apply their knowledge of mathematical pedagogical approaches (initially considered in week 3) to the content on assessment, adaptive teaching and planning in relation to their understanding of the mathematics curriculum (in weeks 12-15).  Similarly, although there is a strong emphasis on the way in which, for example, Cognitive Load Theory relates to effective mathematics teachers in week 4, trainees are also encouraged to reconsider this content in how it supports approaches to modeling and scaffolding in week 10.

References

* Department for Education (DfE) 2019. ITT Core Content Framework <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/974307/ITT_core_content_framework_.pdf> (Last Accessed 03/08/22)
* Hodgen, J., Foster, C., Marks, R., & Brown, M. (2018). Evidence for Review of Mathematics Teaching: Improving Mathematics in Key Stages Two and Three: Evidence Review. London: Education Endowment Foundation. Available from: <https://educationendowmentfoundation.org.uk/evidence-summaries/evidencereviews/improving-mathematics-in-key-stages-two-and-three>
* Ofsted (2021) Research Review Series: Mathematics. Available from:

<https://www.gov.uk/government/publications/research-review-series-mathematics/research-review-series-mathematics>

| Week (starting 5.9.22) | For the subject they are training in trainees should know:*(max 3 bullet points)* | For the subject they are training in trainees should be able to:*(max 3 bullet points)* | Key questions *(2-3 as indicators of progress)* | CCF | Method of Assessment |
| --- | --- | --- | --- | --- | --- |
| 1 | INDUCTION WEEK |
| 2(w.b 5.9.22) | * The place of Mathematics in the National Curriculum (2014) and the topics/content covered.
* Why it is important that pupils gain a secure conceptual understanding of key mathematical ideas.
* What it means to be a professional in terms of standards and expectations.
* An introduction to Safeguarding. To know the current legislation for keeping children safe in education (KCSIE, 2022) and schools safeguarding policies.
 | * Identify conceptual, processual and content demands of the current Mathematics National Curriculum (2014).
* Teachers can influence pupils’ resilience and beliefs about their ability to succeed, by ensuring all pupils have the opportunity to experience meaningful success.
* Know that developing a securing understanding in mathematics requires a range of problem-solving skills in addition to procedural computational processes.
* Ask critical questions to enable them and pupils to develop.
* Understand that safeguarding and promoting the welfare of children is everyone’s responsibility to create a culture of mutual trust and respect to support effective relationships.
 | 1. Using the Ofsted Research Review for Mathematics (2021), what are the essential, knowledge and skills which are to be developed in the mathematics curriculum? Reflect on your strengths and areas of development.
2. Explain what you understand about the expectations of a professional teacher.
3. Knowledge-rich curriculum- what are we really talking about when referring to Mathematics?
 | S&C.1S&C.2S&C.4S&C.3MB.4 | Audit and WDS |
| CCF evidence base | Ball, D. L., Thames, M. H., & Phelps, G. (2008) Content knowledge for teachers: What makes it special? Journal of Teacher Education, 2008 59: 389 DOI: 10.1177/0022487108324554 [Online] Accessible from: <https://www.math.ksu.edu/~bennett/onlinehw/qcenter/ballmkt.pdf>.Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014) *What makes great teaching. Review of the underpinning research*. Durham University: UK. Available at: <http://bit.ly/2OvmvKO>Biesta, G. (2009) Good education in an age of measurement: on the need to reconnect with the question of purpose in education.Educational Assessment, Evaluation and Accountability, 21(1) |
| 3 | * The importance of subject knowledge in motivating pupils, teaching effectively and being able to identify gaps in the conceptual, processual, and content demands of the current Mathematics National Curriculum, for example, through the Mathematical Thinking thread that includes reasoning, fluency and problem-solving.
* There are many approaches to lesson planning such as ALC or teaching for mastery rooted in disciplinary concepts and/or processes.
* The duty of a Mathematics teacher in adhering to the Equality Act 2010.
 | * Identify and address areas of development of subject knowledge in the Mathematics National Curriculum.
* Recognise progression and sequencing of knowledge and skills in Mathematics, for pupils to master building on prior knowledge by organising this knowledge into increasingly complex mental models (or “schemata”), including reference to the key ideas in teaching for mastery in mathematics.
* Identify and reflect on approaches to eliminate discrimination and plan for a safe and inclusive learning environment when teaching Mathematics.
 | 1. How secure is your subject knowledge for the studies outlined in the Mathematics National Curriculum? What are your areas of strength and those in need of development?
2. Why do we need to consider pupils’ prior knowledge when planning?
3. How can you ensure that all pupils can access the learning within the classroom? Reflect on what decolonisation looks like in Mathematics.
 | S&C.2S&C.3S&C.4S&C.5S&C.7AT.1AT.2HPL.6HE.1HE.3 | Audit and WDSQuiz:Safeguarding FeministaPrevent |
| CCF evidence base | Deunk, M. I., Smale-Jacobse, A. E., de Boer, H., Doolaard, S., & Bosker, R. J. (2018) Effective differentiation Practices: A systematic review and meta-analysis of studies on the cognitive effects of differentiation practices in primary education. *Educational Research Review*, *24*(February), 31–54. https://doi.org/10.1016/j.edurev.2018.02.002. Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2008) Learning Styles: Concepts and Evidence. Psychological Science in the Public Interest, 9 (3). Gathercole, S., Lamont, E., & Alloway, T. (2006) Working memory in the classroom. Working memory and education, 219-240. |
| 4 | * Common misconceptions develop when prior knowledge is weak for example, when trying to build on the misuse of shallow, procedural, and mathematically incorrect rules.
* There are a range of theories linked to how pupils learn; however, Cognitive Load Theory is the predominant one at present.
* Pupils have a range of needs and strengths and recognise some of the reasons for this and the importance of high expectations to stretch and challenge all pupils. DSLs and other specialist colleagues also have valuable expertise and can ensure that appropriate support is in place for pupils.
 | * Structure tasks and questions that allow teachers and pupils to easily identify misconceptions and knowledge-gaps and address them using concrete examples.
* Plan a sequence of learning to deliver to peers building on the schema and add new learning/ knowledge using retrieval practice and spiral curriculum (Bruner, 1960) which helps pupils understand key mathematical concepts, e.g. through the links between number and algebra.
* Support ALL pupils including those with a range of additional needs. Utilising, for example, the SEND Code of Practice, which provides additional guidance on supporting pupils with SEND effectively. Know the importance of understanding safeguarding procedures and have an awareness of key areas such as Prevent and sexual harassment.
* Identify what Safeguarding issues to look out for and explain generic safeguarding strategies and know the response to a range of behavioural/ safeguarding situations, for example FGM, Online Bullying, Radicalisation and Prevent
 | 1. How do you plan to check for prior knowledge and pre-existing misconceptions?
2. How does research and theories inform lesson planning?
3. Why is it important to work closely with colleagues/families and other professionals to support pupils with specific needs?
 | AT.1AT.2AT.3AT.6HPL.6HE.2HE.3HE.5S&C.4 | WDS |
| CCF evidence base | Davis, P., Florian, L., Ainscow, M., Dyson, A., Farrell, P., Hick, P., Rouse, M. (2004) Teaching Strategies and Approaches for Pupils with Special Educational Needs: A Scoping Study. Accessible from: <http://dera.ioe.ac.uk/6059/1/RR516.pdf>.Roediger, H. L., & Butler, A. C. (2011) The critical role of retrieval practice in long-term retention. Trends in Cognitive Sciences, 15(1), 20–27. https://doi.org/10.1016/j.tics.2010.09.003.Willingham, D. T. (2010) The Myth of Learning Styles, Change, 42(5), 32–35. |
| 5 | * We are all language teachers, and Mathematics provides the perfect vehicle for teaching literacy by explicitly teaching reading, writing and oral language skills. High-quality classroom talk can support pupils to articulate key ideas, consolidate understanding and extend their vocabulary. For example, by justifying mathematical reasoning. This should also incorporate EAL learners and supporting their access to their curriculum, but not as a homogenous group.
* 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.
* An important factor in learning is memory which can be overloaded. Rosenshine’s Principles of instruction and the response to Sweller’s Cognitive Load theory reduces cognitive overload in the classroom.
 | * Identify and address EAL pupils’ language needs utilising strategies that can support language development, for example Hester’s BEL stages
* 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) such as model exemplar answers to pupils with rationale provided, begin to scaffold and guide pupils through work/assessments against learning outcomes and develop strategies for prior knowledge retrieval.
* Use retrieval, scale switching, spaced and interweaving in planning sequentially to helps pupils improve their mathematical thinking, problems-solving and procedural skills. Using expositions in the form of analogies, knowledge organisers, memory aids and worked examples to avoid cognitive overload.
 | 1.What are the literate demands of Mathematics education? How could you introduce unfamiliar vocabulary in a new topic?2. Read Fordham’s (2017) article on Cognitive Science and discuss the role of memory in Mathematics education.3. What questions can you ask pupils to help them develop their own learning (metacognition)? | HPL.1HPL.2HPL.3HPL.4HPL.5HPL.6HPL.7HPL.8HPL.9S&C.9CP.7 | WDS |
| CCF evidence base | Education Endowment Foundation (2018) Preparing for Literacy Guidance Report. [Online] Accessible from: <https://educationendowmentfoundation.org.uk/public/files/Publications/Literacy/Preparing_Literacy_Guidance_2018.pdf>Kirschner, P., Sweller, J., Kirschner, F. & Zambrano, J. (2018) From cognitive load theory to collaborative cognitive load theory. In International Journal of Computer-Supported Collaborative Learning, 13(2), 213-233. Rosenshine, B. (2012) Principles of Instruction: Research-based strategies that all teachers should know. American Educator, 12–20. https://doi.org/10.1111/j.1467-8535.2005.00507.x |
|  | **SEND Enhancement (Week 6)** |
| 6SEND Enhancement | * Pupils have a range of needs and strengths and begin to gain knowledge of the reasons for this. Teaching should be adapted to respond this these needs with a view to increasing pupil success. For example, by using faded mathematical modelling for example-pairs.
* Seeking to understand pupils’ differences, including their different levels of prior knowledge and potential barriers to learning, is an essential part of teaching Mathematics.
* Teaching assistants (TAs) can support pupils more effectively when they are prepared for Mathematics lessons by teachers, and when TAs supplement rather than replace support from teachers.
 | * Demonstrate some ability to adapt their planning to respond to the needs and strengths of individuals, for example plan for effective modelling and scaffolding of tasks. This should include using pupil/school wide data to inform planning.
* Work with the SENDCO and other professionals supporting pupils with additional needs, including how to make explicit links between interventions delivered outside of lessons with classroom teaching.
* Discuss with expert colleagues how to share the intended lesson outcomes with teaching assistants ahead of lessons
 | 1. Why is it important to talk about *adaptive* teaching rather than *differentiated* teaching? Can you give an example of where you have seen pupils receiving different types of support within their learning?
2. Reflecting on your enhancement experience, how do expert colleagues adapt lessons whilst maintaining high expectations for all pupils?
3. Reflecting on your enhancement experience, how does the placement school group pupils and does this change regularly?
 | AT.1AT.2AT.3AT.4AT.5AT.6AT.7HE.3HE.6 | WDS |
| CCF evidence base | Education Endowment Foundation (2015) Making Best Use of Teaching Assistants Guidance Report. [Online] Accessible from:<https://educationendowmentfoundation.org.uk/education-evidence/guidance-reports/teaching-assistants> [retrieved 10 August 2022].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. |
|  | **Introductory Placement starts (Week 7)** |
| 7Start of introductory phase on placement | * Teachers are key role models, who can influence the attitudes, values and behaviours of their pupils.
* A culture of mutual trust and respect supports effective relationships between Mathematics teachers and their pupils using Brofenbrenner’s ecological systems theory.
* A positive and safe learning environment rooted in routines and the building of trusting relationships benefits all pupils but is particularly valuable for pupils with SEND.
 | * 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 respond quickly to any behaviour or bullying that threatens emotional safety.
* Use inspirational and consistent language that promotes challenge, aspiration, resilience, and praises pupil effort. Set tasks which stretch pupils, but which are achievable.
* Generate a positive and respectful learning environment in which making mistakes, resilience and perseverance are part of a daily routine using Maslow’s Hierarchy of Needs. For example, promoting the view that making mathematical is acceptable and may be a necessary part of learning.
* Identify and familiarise themselves with placement setting safeguarding procedure, including the name of the Safeguarding Lead. They should know their role and responsibilities in this process to keeping children safe
 | 1. What have you learnt about the importance of having high expectations? Discuss and analyse 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.
2. How do staff in your school ensure there is a culture of respect and trust? Have you seen any effective/ineffective examples of this?
3. What do you think a positive learning environment looks like in your subject? How would you plan for this?
 | HE.1MB.2MB.4MB.5MB.7MB.1MB.3HE.5 | WDS |
| CCF evidence base | \*PISA (2015) PISA in Focus: Do teacher-student relations affect students’ well-being at school? Accessible from: <https://doi.org/10.1787/22260919>. |
| 8 | * There are common behavioural issues found in the classroom. Setting clear expectations can help communicate shared values that improve classroom and school culture.
* Teachers have the ability to affect and improve the wellbeing, behaviour, motivation and learning of their pupils with high quality teaching and emotional intelligence through self-regulation.
* That Dweck’s’ (2006) Growth Mindset alongside a positive mental attitude is important in the classroom. Teachers can influence pupils’ resilience, motivation and beliefs about their ability to succeed, by ensuring all pupils have the opportunity to experience meaningful success and that pupils’ feelings are considered.
 | * Begin to know how to foster relationships with pupils (e.g. learning pupil names and 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.
* Apply rules, sanctions, rewards, and praise in line with the school policy. Respond to any behaviour or bullying which threatens pupil’s emotional safety
* Set clear behavioural expectations and routines which establish a consistent and inclusive learning environment.
 | 1. Have you been able to identify any inspirational or challenging language? What impact did this have on the learning in that classroom?
2. How can intrinsic and extrinsic rewards be used to support behaviour management in Mathematics?
3. Discuss and analyse with expert colleagues how routines are established at the beginning of the school year and maintained throughout, both in classrooms and around the school.
 | HE.1HE.2HE.4HE.6MB.1MB.2MB.3MB.4MB.5 | WDS |
| CCF evidence base | Chapman, R. L., Buckley, L., & Sheehan, M. (2013) School-Based Programs for Increasing Connectedness and Reducing Risk Behavior: A Systematic Review, 25(1), 95–114Institute of Education Sciences (2008) Reducing Behavior Problems in the Elementary School Classroom. Accessible from https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/behavior\_pg\_092308.pdfSibieta, L., Greaves, E. & Sianesi, B. (2014) Increasing Pupil Motivation: Evaluation Report. [Online] Accessible from: https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/increasing-pupil-motivation/ |
| 9 | HALF TERM |
| 10 | * Guides, scaffolds and worked examples can help pupils apply new ideas, but should be gradually removed as pupil expertise increases
* Modelling helps pupils understand new processes and ideas; good models make abstract ideas accessible, for example when using bar-modelling in forming and solving equations.
* Identify essential concepts, knowledge and skills within a carefully sequenced and coherent curriculum. Provide opportunity for all pupils to learn and master essential concepts, knowledge and skills in that subject
 | * Use modelling, explanations and scaffolds, acknowledging that novices need more structure early in a domain.
* Enable critical thinking and problem solving by first teaching the necessary foundational content knowledge.
* Remove scaffolding only when pupils are achieving a high degree of success in applying previously taught material. Provide sufficient opportunity for pupils to consolidate and practise applying new knowledge and skills.
 | 1. What do you understand by modelling and how have you seen modelling used by other teachers?
2. Have you been able to identify how students are supported in mastering important concepts in your subject? What made this effective? Can you identify this in the department’s approach to T&L?
 | CP.3CP.4HPL.9S&C.1S&C.2S&C.4S&C.3CP.4CP.5 | WDS |
| CCF evidence base | Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014) What makes great teaching. Review of the underpinning research. Durham University: UK. Available at: <http://bit.ly/2OvmvKO>Education Endowment Foundation (2017) Metacognition and Self-regulated learning Guidance Report. [Online] Accessible from: https://educationendowmentfoundation.org.uk/tools/guidance-reports/ Rosenshine, B. (2012) Principles of Instruction: Research-based strategies that all teachers should know. American Educator, 12–20. <https://doi.org/10.1111/j.1467-8535.2005.00507.x> |
| 11 | * 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. For example, knowing basic angle facts before solving more complex geometric problems involving parallel lines.
* Where prior knowledge is weak, pupils are more likely to develop misconceptions, particularly if new ideas are introduced too quickly without clear exposition or when unhelpful mathematically incorrect rules take precedent over conceptual understanding.
* The value of retrieval and spaced practice and interleaving to strengthen recall over time- through exploring Rosenshine’s (2012) Principles of Instruction and retrieval-based strategies such as spaced practice especially for substantive concepts.
 | * Start expositions at the point of pupil understanding. Avoid overloading working memory by taking prior learning into account when introducing new content and breaking such content into smaller steps/the constituent parts.
* Sequence learning so pupils are secure in foundational knowledge before introducing more complex material
* Use modelling, scaffolding and explanations to assist with structuring learning, and recognise the need to remove this when pupils can apply such structures to prior learning

  | 1. What have you learned about how pupils learn and how have you applied this in practice? [Prompts – cognitive load, retrieval practice, spacing and interleaving].
2. In what ways have aspects of learning been broken down into manageable chunks for the pupils – when have things needed to be broken down and why?
3. Explain the essential concepts, knowledge, and skills which are to be developed in the school’s Mathematics curriculum. Explain the rationale behind the curriculum sequence so that pupils secure foundational knowledge before encountering more complex content.
 | HPL.1HPL.2HPL.3HPL.4HPL.5HPL.6HPL.7HPL.8CP.5 | WDS |
| CCF evidence base | Deans for Impact (2015) The Science of Learning [Online] Accessible from: <https://deansforimpact.org/resources/the-science-of-learning/>.Gathercole, S., Lamont E. and Alloway, T (2006) Working Memory in the Classroom. Working Memory and Education, 219-240. |
| 12 | * Effective assessment is critical to teaching because it provides teachers with information about pupils’ understanding and needs (assessment data to inform planning).
* There are differences between Assessment of learning and Assessment For learning- including purpose and type. Black and William’s approach to ‘Inside the Black box’- raising classroom standards by assessment.
 | * Use spaced repetition, through planning retrieval practice and structured tasks to demonstrate assessment of prior knowledge, knowledge gaps and misconceptions
* Practice Mathematics specific progression models/resources e.g. NCETMs Checkpoints and progression maps
* 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)
 | 1. Where have you been able to utilise summative and formative assessment? How effectively do you utilise your formative feedback to help pupils progress?
2. How does your department assess pupils? How is this reflected in your planning and teaching?
3. How do you plan for formative assessment tasks linked to lesson objectives? How could you develop this area of your practice?
 | AS.1AS.2AS.3AS.4 | WDS |
| CCF evidence base  | \*Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2004). Working inside the Black Box: Assessment for Learning in the Classroom. Phi Delta Kappan, 86(1), 8–21. Accessible from: <https://eric.ed.gov/?id=EJ705962> Speckesser, S., Runge, J., Foliano, F., Bursnall, M., Hudson-Sharp, N., Rolfe, H. & Anders, J. (2018) Embedding Formative Assessment: Evaluation Report. [Online] Accessible from: https://educationendowmentfoundation.org.uk/public/files/EFA\_evaluation\_report.pdf [retrieved 10 October 2018].Wiliam, D. (2017) Assessment, marking and feedback. In Hendrick, C. and McPherson, R. (Eds.) What Does This Look Like in the Classroom? Bridging the gap between research and practice. Woodbridge: John Catt |
| 13 | * High-quality classroom talk can support pupils to articulate key ideas, consolidate understanding and extend their vocabulary
* 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. Carefully crafted questions can help to assess conceptual understanding rather than only mathematical correctness.
* Paired and group activities can increase pupil success, but to work together effectively pupils need guidance, support and practice
 | * Include 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 their mathematical reasoning).
* Prepare a range of target questioning techniques to enable the identification of knowledge gaps and misconceptions and reframe questions to provide greater scaffolding or greater stretch.
* Use concrete examples, chunking and non-examples to support good exposition when introducing new content to avoid overloading the working memory.
 | 1. How can you identify gaps in understanding? Why are deliberate misconceptions and ‘hinge’ questions important? Why is it important to give manageable, specific and sequential instructions?
2. How do you feel you are developing in your use of questioning and effective classroom talk? Provide an example of when you’ve used a model to help explain a concept.
3. When have you used concrete representation of abstract ideas, such as through analogy or metaphor?
 | AS.1AS.5AS.6CP.6CP.7CP.9 | WDS |
| CCF evidence base | Education Endowment Foundation (2016) A marked improvement? A review of the evidence on written marking. Accessible from: <https://educationendowmentfoundation.org.uk/public/files/Publications/EEF_Marking_Review_April_2016.pdf>.Rich, P. R., Van Loon, M. H., Dunlosky J., Zaragoza, M. S. (2017) Belief in corrective feedback for common misconceptions: Implications for knowledge revision. Journal of Experimental Psychology: Learning, Memory and Cognition. 43(3) 492-502. http://dx.doi.org/10.1037/xlm0000322 |
| 14 | * Pupils’ responses to feedback/ feedforward can vary depending on a range of social factors (e.g. the message the feedback contains or the age of the pupil).
* Effective assessment is critical to teaching because it provides teachers with information about pupils’ understanding and needs. 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 (Hattie, 2007). For example, by using the NCETM Checkpoints in Year 7 mathematics.
* 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.
 | * Plan to scaffold self-assessments by sharing model work with pupils, highlighting key details using technology such as visualisers.
* Utilise feedback that is specific and helpful when using peer- or self- assessment
* Explicitly teach pupils metacognitive strategies linked to subject knowledge, including how to plan, monitor and evaluate, supports independence and academic success using DIRT
 | 1. How do you ensure that pupils respond to your feedback? How do you adapt your feedback, so all children make progress?
2. Reflect on how your placement makes marking manageable and effective. Think about how they record and utilise data to improve pupil outcomes, alternative approaches to providing feedback (e.g. whole class feedback or peer-assessment)
3. How do you ensure that your written and verbal feedback to pupils is high quality?
 | AS.1AS.4AS.5AS.6 | WDS |
| CCF evidence base  | Deans for Impact (2015) The Science of Learning [Online] Accessible from: <https://deansforimpact.org/resources/the-science-of-learning/>.Cordingley, P., Higgins, S., Greany, T., Buckler, N., Coles-Jordan, D., Crisp, B., Saunders, L. & Coe, R. (2015) Developing Great Teaching. Accessible from: https://tdtrust.org/about/dgt. [accessed 18 October 2018].Education Endowment Foundation (2017) Metacognition and Self-regulated learning Guidance Report. [Online] Accessible from: https://educationendowmentfoundation.org.uk/tools/guidance-reports/ William, D. (2017) Assessment, marking and feedback. In Hendrick, C. and McPherson, R. (Eds.) *What Does This Look Like in the Classroom? Bridging the gap between research and practice*. Woodbridge: John Catt. |
|  | **Introductory Placement Ends** |
| 15 | * Pupils are likely to learn at different rates and to require different levels and types of support from teachers to succeed.
* Adapting teaching in a responsive way, including by providing targeted support to pupils who are struggling, is likely to increase pupil success.
* 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. For example, by providing opportunities to develop deeper mathematical understanding in a key concept rather than moving onto a higher level.
 | * Identify pupils who need new content further broken down and/or who benefit from additional adaptations
* Support pupils with a range of educational needs including how to use guidance in the SEND code of practice.
* Ensure that all pupils have the opportunity to meet high expectations, rather than artificially creating distinct tasks for specific classes/pupils. Plan and include questions and tasks to extend and challenge pupils.
 | 1. How have you adapted your teaching to ensure that pupils with specific needs are able to access learning within your classroom/lessons? How effective has this been?
2. What does challenging pupils look like in your Mathematics lessons? How could you develop this?
3. How have you ensured high expectations for learning for all pupils?
 | AT.1AT.2AT.3AT.4AT.5AT.6AT.7HE.3HE.4 | WDS |
| CCF evidence base | Education Endowment Foundation (2018) Sutton Trust-Education Endowment Foundation Teaching and Learning Toolkit: Special Educational Needs in Mainstream Schools Accessible from <https://educationendowmentfoundation.org.uk/education-evidence/guidance-reports/send> |
| 16 | * Positive framing plays an important part in developing a growth mindset
* Additional members of staff provide valuable support with individual/ groups of pupils
* The issues and challenges facing EAL and PP pupils and meeting individual needs without creating unnecessary workload avoiding different lessons for different groups of pupils.
 | * Develop activities that can stretch and challenge pupils of all abilities
* Use a variety of strategies to meets the needs of their pupils and critically reflect on their ability to model and scaffold
* Engage support staff effectively and develop strategies to support EAL pupils with language acquisition, for example Jim Cummins’ Framework using CAP and BIC, teaching decolonised histories such as Middle East and Asia– common origins of EAL learners.
 | 1. How successful are you at making use of specialist support (such as TA’s) in your lessons? How could this be developed?
2. Critically reflect on your use of modelling and scaffolding.
3. What knowledge and understanding of teaching pupils for whom English is an additional language have you gained through your academic reading? How does this relate to your practice?
 | AT.1AT.2AT.3AT.4AT.5AT.6AT.7 | WDS |
| CCF evidence base  | Deunk, M. I., Smale-Jacobse, A. E., de Boer, H., Doolaard, S., & Bosker, R. J. (2018) Effective differentiation Practices: A systematic review and meta-analysis of studies on the cognitive effects of differentiation practices in primary education. *Educational Research Review*, *24*(February), 31–54. https://doi.org/10.1016/j.edurev.2018.02.002.  |
| 17 | CHRISTMAS VACATION |
| 18 |
| CCF evidence base  | \*PISA (2015) PISA in Focus: Do teacher-student relations affect students’ well-being at school? Accessible from: https://doi.org/10.1787/22260919. |
| 19 | * How teachers can be generators of educational knowledge and how action research can be used as a tool to help develop pupil learning.
* Reflective practice, supported by feedback from and observation of experienced colleagues, professional debate, and learning from educational research, is also likely to support improvement
* Effective RSE supports people, throughout life, to develop safe, fulfilling and healthy sexual relationships, at the appropriate life stage
 | * Implement the RSE (2021) statutory guidance whilst teaching the 4 core areas of the curriculum: Identity, gender and sexuality, Consent and healthy relationships, Anatomy, sexual health and fertility, and RSE in a digital context within a safe space.
* Strengthen and extend pedagogical and subject knowledge by participating in wider networks and lesson preparation such as National Centre for Excellence in the Teaching of Mathematics and the Mathematical Association.
* Trial and critically evaluate new approaches in their practice with a view to developing practice, for example teaching for mastery in mathematics.
 | 1. What ideas from research and first-hand experience have you used, adapted, and developed to inspire and motivate pupils in the mathematics classroom?
2. Think about something you have learnt – how would you do things differently next time?What research did you carry out to help you understand this further? What are your strengths and weaknesses?
3. What are effective tools in teaching RSE?
 | PB. 1PB.2PB.7HP.1 | WDS |
| CCF evidence base  | Education Endowment Foundation (2018) Sutton Trust-Education Endowment Foundation Teaching and Learning Toolkit: Accessible from: https://educationendowmentfoundation.org.uk/evidence-summaries/teaching-learning-toolkit/ [retrieved 10 October 2018]. |
| 20 | * Every teacher has a responsibility to develop pupils’ literacy through the promotion of systematic synthetic phonics, particularly if teaching early reading and spelling.
* 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
* High-quality classroom talk can support pupils to articulate key ideas, consolidate understanding and extend their vocabulary. For example, using the correct mathematical language allows children to justify their geometric reasoning more precisely.
 | * Teach unfamiliar vocabulary explicitly and plan for pupils to be repeatedly exposed to high-utility and high-frequency vocabulary in what is taught, for example, formal language for geometry and algebraic terminology.
* Model and require 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).
* Promote reading for pleasure (e.g. by using a range of whole class reading approaches and regularly reading high-quality texts to children
 | 1. Are we all literacy teachers? Note down some examples of mathematics’ ability to contribute to literacy
2. How could you introduce unfamiliar vocabulary in a new topic and reinforce ‘sticky’ substantive concepts in a new topic?
3. How can we approach promoting reading for pleasure and engagement with academic scholarship in the mathematics classroom?
 | CP.7S&C 9S&C 10 | WDS |
| CCF evidence base  | Machin, S., McNally, S., & Viarengo, M. (2018) Changing how literacy is taught: Evidence on synthetic phonics. American Economic Journal: Economic Policy, 10(2), 217–241. https://doi.org/10.1257/pol.20160514. |
|  | **Start of Developmental Placement (Week 21)** |
| 21Start of consolidation phase | * Learning involves a lasting change in pupils’ capabilities or understanding
* Explicitly teaching pupils the knowledge, concepts and skills they need to succeed within mathematics is beneficial. The notion of schema and schemata linked to subject knowledge, content, and learning is important in achieving this.
* Bruner’s (1960) Spiral Curriculum linked to curriculum design and sequencing to secure foundational knowledge before encountering more complex content. For example, the importance of having a securing understanding of equivalence before adding fractions.
 | * Teach lessons for all pupils to learn and master essential concepts, knowledge, skills and principles of Mathematics building on prior learning and retrieval practices.
* Accumulate and refine a collection of powerful analogies, illustrations, examples, explanations and demonstrations. This should include using resources and materials aligned with the school curriculum (e.g. textbooks)
* Critically review subject knowledge for this setting and create an action plan to aid development in weaker areas
* Identify and familiarise themselves with placement setting safeguarding procedure, including the name of the Safeguarding Lead. They should know their role and responsibilities in this process to keeping children safe
 | 1. Can you give an example of how a specific teaching technique has supported students to make progress?
2. When planning a sequence of lessons, how have expert colleagues ensured that pupils have secure foundational knowledge before moving on to more complex content?
3. How does the curriculum in mathematics promote the wider vision, values and skills of the school? What is the rationale behind the curriculum sequence and design in your subject area?
 | HPL.1S&C.5 | WDS |
| CCF evidence base  | Sweller, J. (2016). Working Memory, Long-term Memory, and Instructional Design. Journal of Applied Research in Memory and Cognition, 5(4), 360–367. <http://doi.org/10.1016/j.jarmac.2015.12.002>.Van de Pol, J., Volman, M., Oort, F., & Beishuizen, J. (2015) The effects of scaffolding in the classroom: support contingency and student independent working time in relation to student achievement, task effort and appreciation of support. Instructional Science, 43(5), 615-641 |
| 22 | * Giving clear, manageable, specific and sequential instructions for tasks and behaviour which use consistent language and/or non-verbal signals promotes high expectations
* Check pupils’ understanding of a task before it begins and address any misconceptions in a positive learning environment linked to Dweck’s (1996) idea of Growth Mindset
* Reinforce established school and classroom routines maximises time for learning linked to Skinner’s (1953) theory of Operant conditioning linked to behaviour management.
 | * Manage pupil behaviour using a range of strategies including the school policy
* Reflect on the need to set high expectations and the impact of this in the classroom
* Identify and address misconceptions by re-teaching or providing additional resources/strategies to aid understanding. This is essential at the lesson planning stage.
 | * What knowledge and understanding of the issues related to HE and MB have you gained through your academic reading? How does this relate to your current practice?
* How have your expectations of pupils’ learning and progress developed and/or changed in light of your previous placement experience?
* How can you ensure pupils are motivated? What have you done to get to know the pupils in your classroom as individuals?
 | MB.1MB.2MB.6MB.7 | WDS |
| CCF evidence base  | Kern, L., & Clemens, N. H. (2007) Antecedent strategies to promote appropriate classroom behavior. Psychology in the Schools, 44(1), 65–75. <https://doi.org/10.1002/pits.20206>.Lazowski, R. A., & Hulleman, C. S. (2016) Motivation Interventions in Education: A Meta-Analytic Review. Review of Educational Research, 86(2), 602–640. <https://doi.org/10.3102/0034654315617832>.Sibieta, L., Greaves, E. & Sianesi, B. (2014) Increasing Pupil Motivation: Evaluation Report. [Online] Accessible from: https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/increasing-pupil-motivation/ [retrieved 10 October 2018]. |
| 23 | * Teachers can make valuable contributions to the wider life of the school in a broad range of ways. This includes developing effective professional relationships with colleagues, in addition to parents, carers and families with a view to improving pupils’ motivation, behaviour and academic success
* 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
* SENCOs, pastoral leaders, careers advisors and other specialist colleagues also have valuable expertise and can ensure that appropriate support is in place for pupils
 | * Engage critically with research and use evidence to critique practice. For example, understanding the findings from the Ofsted Research Review for Mathematics.
* Reflect upon and work towards being an effective and professional team member in a Mathematics department.
* Contribute 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).
 | 1. How has your knowledge of teaching and learning developed so far?
2. Beyond teaching mathematics, how might/ have you contributed to the wider school culture?
3. Describe how you’ve implemented mathematics education research into your practice.
 | PB.3PB.4PB.5PB.6 | WDS |
| CCF evidence base  | Carroll, J., Bradley, L., Crawford, H., Hannant, P., Johnson, H., & Thompson, A. (2017) SEN support: A rapid evidence assessment. Accessible from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/628630/DfE\_SEN\_Support\_REA \_Report.pdf\*Cordingley, P., Higgins, S., Greany, T., Buckler, N., Coles-Jordan, D., Crisp, B., Saunders, L. & Coe, R. (2015) Developing Great Teaching. Accessible from: <https://tdtrust.org/about/dgt>. |
| 24 | * Important to sequence learning so pupils are secure in foundational knowledge before introducing more complex material
* Use modelling, scaffolding and explanations to assist with structuring learning, and recognise the need to remove this when pupils can apply such structures to prior learning. For example, by using paired-examples when modelling algebraic manipulation.
* Important to provide opportunities for all pupils to learn and master essential concepts, knowledge and skills in mathematics
 | * Plan lessons to promote, practice and revisit key concepts and skills required in Mathematics that are taught within secondary education linked to Bruner’s (1960) Spiral Curriculum to master knowledge.
* Critique the core subject concepts and skills to allow for contemporary in-roads into mathematics, for example.
* Draw explicit links between new content and the core concepts and principles in Mathematics
 | 1. Give an example of when you have used a model to help explain a concept.
2. What are the essential skills, knowledge, concepts and principles in your subject area? Can you identify this in the department’s approach to T&L?
3. Have you been able to identify how students are supported in mastering important concepts in your subject? What made this effective?
 | CP.2CP.8S&C.1S&C.3S&C.5S&C.7 | WDS |
| CCF evidence base  | Deans for Impact (2015) The Science of Learning [Online] Accessible from: https://deansforimpact.org/resources/the-science-of-learning/. |
| 25 | HALF TERM |
| 26 | * Additional members of staff provide valuable support with individual/ groups of pupils in addition to flexibly grouping pupils within a class to provide more tailored support
* Seeking to understand pupils’ differences, including their different levels of prior knowledge and potential barriers to learning, is an essential part of Mathematics teaching.
* A predictable and secure environment benefits all pupils but is particularly valuable for pupils with special educational needs.
 | * Develop activities that can stretch and challenge pupils of all abilities. This may include critically reflecting on the use of modelling and scaffolding.
* Use a variety of questioning strategies
* Develop strategies to support EAL pupils such as the use of graphic organisers
 | * How successful are you at making use of specialist support (such as TA’s) in your lessons? How could this be developed?
* Critically reflect on your use of modelling and scaffolding.
* What knowledge and understanding of teaching pupils for whom English is an additional language have you gained through your academic reading? How does this relate to your current practice and/or setting?
 | AT.3AT.5AT.7 | WDS |
| CCF evidence base  | Carroll, J., Bradley, L., Crawford, H., Hannant, P., Johnson, H., & Thompson, A. (2017) SEN support: A rapid evidence assessment. Accessible from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/628630/DfE\_SEN\_Support\_REA \_Report.pdfEducation Endowment Foundation (2015) Making Best Use of Teaching Assistants Guidance Report. [Online] Accessible from: https://educationendowmentfoundation.org.uk/tools/guidance-reports/ [retrieved 10 October 2018]. |
| 27 | * Effective assessment is critical to teaching because it provides teachers with information about pupils’ understanding and needs.
* Good assessment helps teachers avoid being over-influenced by potentially misleading factors, such as how busy pupils appear. For example, misinterpreting correct mathematical solutions based on incorrect methods.
* Before using any assessment, teachers should be clear about the decision it will be used to support and be able to justify its use.
 | * Plan formative assessment tasks linked to lesson objectives and how to think ahead about what would indicate understanding (e.g., using hinge questions) and monitor pupil work during lessons, including checking for misconceptions.
* Structure assessment tasks to check for prior knowledge, knowledge gaps, and pre-existing misconceptions
* Draw conclusions about the level of pupil learning based on effective assessment tasks and the use of data
 | 1. How have you developed in your understanding and ability to set formative assessment tasks linked to objectives? What are your areas of development?
2. How do you ensure that you are checking pupils have developed in their understanding rather than just checking they understand the task or completed the work? Why is this important?
3. Where have you been able to utilise summative and formative assessment? How effectively do you utilise your formative feedback to help pupils progress?
 | AS.1AS.2AS.3AS.4 | WDS |
| CCF evidence base  | Speckesser, S., Runge, J., Foliano, F., Bursnall, M., Hudson-Sharp, N., Rolfe, H. & Anders, J. (2018) Embedding Formative Assessment: Evaluation Report. [Online] Accessible from: https://educationendowmentfoundation.org.uk/public/files/EFA\_evaluation\_report.pdf [accessed 16.08.22].Wiliam, D. (2017) Assessment, marking and feedback. In Hendrick, C. and McPherson, R. (Eds.) What Does This Look Like inthe Classroom? Bridging the gap between research and practice. Woodbridge: John Catt. |
|  | **End of Developmental Placement** |
| 28 | * That relationships with parents/carers in education is crucial to understanding pupils’ individual circumstances that ensure high academic and behavioural expectations and proactively highlight successes.
* Critically engage with research and use evidence to critique practice. Leading to an identification of areas for development and engage in appropriate CPD with clear intentions for pupil outcomes. For example, by engaging with the CPD materials from as National Centre for Excellence in the Teaching of Mathematics.
* It is important to build effective relationships by working with colleagues as part of a team
 | * Reflect on the approaches used to develop professional relationships within their wider department and school teams, in addition to those with pupils/parents/carers
* Reflect on how action research can be used as a tool to help develop pupil learning
* Recognise that high quality exposition with effective questioning and modelling on a consistent basis is a crucial element of effective learning.
 | 1. How have you built relationships with parents and carers? How have you communicated with TAs to enable them to support learners in your lessons?
2. Talk about a time when you have shown your understanding of professional behaviour by reacting differently to the way you would have done early on your training.
3. What are your targets? How will you independently and with the support of others decide on, meet and plan further targets in the future?
 |  | WDS |
| CCF evidence base  | Blatchford, P., Bassett, P., Brown, P., Martin, C., Russell, A., & Webster, R. (2009) Deployment and impact of support staff in schools: Characteristics, Working Conditions and Job Satisfaction of Support Staff in Schools. Retrieved from <http://eprints.uwe.ac.uk/12342/>Wittwer, J., & Renkl, A. (2010) How Effective are Instructional Explanations in Example-Based Learning? A Meta-AnalyticReview. Educational Psychology Review, 22(4), 393–409. <https://doi.org/10.1007/s10648-010-9136-5> |
| 29 | * The importance of personal well-being for teachers.
* The benefits of independent study for pupils
* 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.
 | * Plan to manage their work/life balance using strategies such as self-awareness, prioritising, building resilience, recognising stress indicators and time management.
* Use a range of strategies that allows pupils to work independently in lessons and to use homework as a consolidation of their learning in lessons.
* Critically reflect on their own practice
 | 1. Do you promote equality in your practice? What evidence is there of this?
2. How well do you react to formative feedback? How have you acted on the feedback you have received this week?
3. What are your areas for CPD looking ahead to your consolidation placement? What opportunities exist outside of your ITT course to develop these?
 | CP.11 | WDS |
| CCF evidence base  | Mitchell, D. (2014). What really works in special and inclusive education. Oxford: Routledge [chapters 9. 11 and 12]Skaalvik, E. M., & Skaalvik, S. (2017) Still motivated to teach? A study of school context variables, stress and job satisfaction among teachers in senior high school. Social Psychology of Education, 20(1), 15–37. <https://doi.org/10.1007/s11218-016-9363-9>Gibson, S., Oliver, L. and Dennison, M. (2015) Workload Challenge: Analysis of teacher consultation responses. Department forEducation. Accessible from:https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/485075/DFE-RR456A\_-\_Workload\_Challenge\_Analysis\_of\_teacher\_consultation\_responses\_sixth\_form\_colleges.pdf |
|  | **Start of Consolidation Placement (Week 30)** |
| 30 | * Teachers need to respond consistently and decisively to pupil behaviour (inc. the use of rewards, praise and sanctions)
* Important to motivate pupils via the use of challenging content which builds towards pupils’ long-term goals and aspirations. This will include supporting pupils to journey from needing extrinsic motivation to being motivated to work intrinsically
* Work alongside and learn from expert colleagues as part of a wider system of behaviour management
 | * Effectively apply a range of behaviour management strategies. Including the use of positive framing to set high expectations and develop motivated students. Consideration of the difference between intrinsic and extrinsic rewards
* Bronfenbrenner’s (1979) ecological systems theory related to behaviour management and relationships.
* Identify and familiarise themselves with placement setting safeguarding procedure, including the name of the Safeguarding Lead. They should know their role and responsibilities in this process to keeping children safe
 | 1. How does the behaviour policy in your school operate?  How well does it work? Are there exceptions? Does it reach all children? – If not, what adaptations might need to be made and why?
2. Based on your experiences and academic reading, what promotes high expectations and/or a high level of behaviour management?
3. What are your areas of development with regards setting high expectations and managing behaviour? What impact will these developments have on the learning in your classroom?
 | MB1MB4MB5MB6MB7 | WDS |
| CCF evidence base  | Chapman, R. L., Buckley, L., & Sheehan, M. (2013) School-Based Programs for Increasing Connectedness and Reducing Risk Behavior: A Systematic Review, *25*(1), 95–114. Institute of Education Sciences (2008) Reducing Behavior Problems in the Elementary School Classroom. Accessible from <https://ies.ed.gov/ncee/wwc/PracticeGuide/4>.PISA (2015) PISA in Focus: Do teacher-student relations affect students’ well-being at school? Accessible from: <https://doi.org/10.1787/22260919>.Slater, H., Davies, N. M., & Burgess, S. (2011) Do Teachers Matter? Measuring the Variation in Teacher Effectiveness inEngland. Oxford Bulletin of Economics and Statistics, https://doi.org/10.1111/j.1468-0084.2011.00666.x. |
| 31 | * Anticipating common misconceptions within mathematics is also an important aspect of curricular knowledge; working closely with colleagues to develop an understanding of likely misconceptions is valuable, particularly in the teaching of literacy.
* Every teacher can improve pupils’ literacy, including by explicitly teaching reading, writing and oral language skills specific to individual disciplines
* Stimulate pupil thinking and check for understanding by providing scaffolds and collaborative/ paired work for pupil talk to increase the focus and rigour of dialogue. For example, when children justify their mathematical method for a particular problem.
 | * Collaborate with colleagues to effectively use resources and materials (such as shared planning or textbooks). For example, the use of the White Rose Maths package and NCETM Checkpoint assessments.
* Ensure that learning is sequenced so that pupils’ master foundational concepts before moving on
* Anticipate, plan for and encourage pupils to share common misconceptions to they can be addressed, and pupils have relevant and accurate subject specific knowledge such as substantive concepts
* Promote/improve pupils’ literacy levels in Mathematics (inc. the use of subject specific language) using appropriate scaffolding and modelling
 | 1. How effective have you been in helping to address pupils’ misconceptions? How could you develop this?
2. Reflect on a topic you will be teaching during this placement, how will you help pupils develop their literacy skills within the context of this topic?
3. What are the key words and definitions (high frequency vocabulary) that pupils need to know and use for this topic?
 | S&C.4S&C.10CP.3CP.4 | WDS |
| CCF evidence base  | Education Endowment Foundation (2018) Preparing for Literacy Guidance Report. [Online] Accessible from: <https://educationendowmentfoundation.org.uk/public/files/Preparing_Literacy_Guidance_2018.pdf> Zimmerman, B. J. (2002) Becoming a Self-Regulated Learner: An Overview, Theory Into Practice. Theory Into Practice, 41(2),64–70. <https://www.jstor.org/stable/1477457?seq=1#page_scan_tab_contents>  Rich, P. R., Van Loon, M. H., Dunlosky, J., & Zaragoza, M. S. (2017) Belief in corrective feedback for common misconceptions:Implications for knowledge revision. Journal of Experimental Psychology: Learning, Memory, and Cognition, 43(3), 492-501.<http://dx.doi.org/10.1037/xlm0000322>.  |
| 32 | EASTER VACATION |
| 33 |
| 34 | * Effective Mathematics teachers introduce new material in steps, explicitly linking new ideas to what has been previously studied and learned
* Explicitly teaching pupils metacognitive strategies linked to subject knowledge, including how to plan, monitor and evaluate, supports independence and academic success.
* Practice is an integral part of effective Mathematics teaching; ensuring pupils have repeated opportunities to practise, with appropriate guidance and support, increases success. Including the place of variation theory in mathematics teaching.
 | * Balancing exposition, repetition, practice and retrieval of critical knowledge and skills.
* 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).
* Use modelling, explanations and scaffolds, acknowledging that novices need more structure early in a domain.
* Enable critical thinking and problem solving by first teaching the necessary foundational content knowledge.
* Remove scaffolding only when pupils are achieving a high degree of success in applying previously taught material.
 | 1. How can critical thinking be developed within Mathematics lessons? How could you model critical thinking to pupils?2. Can you give examples of how you have developed metacognition and motivation with pupils? For example, how have you helped pupils to develop a weak argument into a stronger one?3. How can you make models more useful for learning? For example, can you provide more than one model and how do you compare the models to the concept you are explaining? | CP.1CP.2CP.6CP.8CP.3CP.4 | WDS |
| CCF evidence base  | Kirschner, P., Sweller, J., Kirschner, F. & Zambrano, J. (2018) From cognitive load theory to collaborative cognitive load theory. In International Journal of Computer-Supported Collaborative Learning, 13(2), 213-233. Jay, T., Willis, B., Thomas, P., Taylor, R., Moore, N., Burnett, C., Merchant, G., Stevens, A. (2017) Dialogic Teaching: EvaluationReport. [Online] Accessible from: <https://files.eric.ed.gov/fulltext/ED581114.pdf> [accessed 16.08.22] |
| 35 | * Include 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).
* Scaffolding and modelling helps to reduce cognitive load.
* How to assess against a GCSE criteria, and alternative/higher mathematics qualifications such as Core Maths.
* As part of the Teaching, Learning and Assessment cycle, assessment enables teachers to draw conclusions about what pupils have learned by looking at patterns of performance over a number of assessments (e.g. appreciating that assessments draw inferences about learning from performance).
 | * Use data to effectively enable pupils to learn and make progress checking for prior knowledge and pre-existing misconceptions.
* Identify common strategies to provide feedback/feedforward to pupils.
* Use subject examination material to structure assessment tasks
 | 1. How do assessment practices in your school motivate pupils to take ownership of their learning? How does it prepare them for GCSE or future study?
2. How do you plan to check for prior knowledge and pre-existing misconceptions?
3. How are you managing the workload of assessment? Have you been able to identify any effective practice which would make assessment less onerous?
 | CP.2CP.3CP.4CP.5AS.1AS.2 | WDS |
| CCF evidence base | Christodoulou, D. (2017) Making Good Progress: The Future of Assessment for Learning. Oxford: OUP. [chapters 6-8]Hattie, J., & Timperley, H. (2007) The Power of Feedback. Review of Educational Research, 77(1), 81–112. <https://doi.org/10.3102/003465430298487>Coe, R. (2013) Improving Education: A triumph of hope over experience. Centre for Evaluation and Monitoring. Accessible from:http://eachandeverydog.net/wp-content/uploads/2015/05/ImprovingEducation2013.pdf |
| 36 | * The importance of developing positive working relationships with pupils/parents/carers
* How action research can be used as a tool to help develop pupil learning
* Professional development is a sustained process over time that will impact positively on pupil outcomes. Teachers of Mathematics need to decolonise own thinking, be sensitive and should model how to engage with emotional and controversial histories.
 | * Work effectively individually and as part of a team
* Deliver high quality teacher exposition, with effective questioning and modelling on a consistent basis.
* Trial and critically evaluate new approaches in their practice with a view to developing practice e.g. Teaching for Mastery (NCETM) Mathematics Education Research Journal
 | 1. How effective is your communication to parents/carers in relation to pupil’s achievements and well-being?
2. What CPD have you engaged with? Reflect on what impact this has had on your practice.
3. How has your understanding of ‘professionalism’ developed since the start of your ITT programme? What insights have you made?
 | PB.7CP.6CP.7 | WDS |
| CCF evidence base  | Cordingley, P., Higgins, S., Greany, T., Buckler, N., Coles-Jordan, D., Crisp, B., Saunders, L. & Coe, R. (2015) Developing GreatTeaching. Accessible from: https://tdtrust.org/about/dgt. [accessed 18 October 2018]. |
| 37 | * The importance of developing their professional identity and educational philosophies
* Prominent models of reflection e.g., Gibbs (1988)
* Know how asking questions and researching subject knowledge and content can aid their development as a teacher of mathematics
 | * Critically reflect on their own practice
* Ask a range of questions (in relation to working with your mentor) to ensure progression of knowledge/pedagogies/application in mathematics
 | 1. ‘No one is born a great teacher. Great teachers continuously improve over time, benefitting from the mentoring of expert colleagues and a structured introduction to the core body of knowledge, skills and behaviours that define great teaching’ (DfE, 2019, p.3). Critically reflect on this statement. Do you agree? To what extent is this true for you?
 | PB.2PB.7 | WDS |
| CCF evidence base  | Basma, B. & Savage, R. (2018) Teacher Professional Development and Student Literacy Growth: a Systematic Review and Meta analysis. Education Psychology Review. 30: 457 https://doi.org/10.1007/s10648-017-9416-4. |
| 38 | * The importance of CPD beyond the PGCE: Looking ahead to Early Career Teaching, MA and Doctoral study
* Reflective practice, supported by feedback from and observation of experienced colleagues, professional debate, and learning from educational research, is also likely to support improvement
* Effective professional development is likely to be sustained over time, involve expert support or coaching and opportunities for collaboration
 | * Set targets and identity next steps for career/ECT progression
* Work with mentors to develop effective relationships and act on the coaching support.
* Know that planning should always be underpinned by up-to-date mathematical scholarship or teaching becomes inaccurate and stale
 | 1. In preparation for your Professional Reflective Viva at the end of the course, what are the areas that you feel are a current strength for you?
2. How could you develop these existing strengths areas next year (for example as you transition in your ECT phase)? Looking at the expectations laid out in the Early Career Framework or speaking to the ECT lead in your setting may be helpful.
 | PB.7PB.2PB.1 | WDS |
| CCF evidence base  | Hughes, D., Mann, A., Barnes, S., Baladuf, B. and McKeown, R. (2016). Careers education: International literature review. https://educationendowmentfoundation.org.uk/evidence-summaries/evidence-reviews/careers-education/ [Accessed 18 October 2018]. |
| 39 | * Ongoing CPD is important for professional and personal development in teaching e.g. Mathematical Association, NCETM, National Archives, British Library.
* Progression on ITE should underpin their development as Mathematics ECTS.
 | * Set targets and identity next steps for career/ECT progression
* Reflect on your ongoing contribution to the effective working of a Mathematics department
* Use NCETM resources and materials to support further development.
 | 1.As you prepare for your Professional Reflective Viva, what are the areas that you need to develop or focus on as you progress as an ECT? How could you develop in these areas? Looking at the expectations laid out in the Early Career Framework or speaking to the ECT lead in your setting may be helpful. | PB.7 | WDS |
| CCF evidence base  | Hughes, D., Mann, A., Barnes, S., Baladuf, B. and McKeown, R. (2016). Careers education: International literature review. https://educationendowmentfoundation.org.uk/evidence-summaries/evidence-reviews/careers-education/ [Accessed 18 October 2018]. |
| 40 | HALF TERM |
| 41 | * Areas of curriculum that are controversial
* Awareness of standards required by classroom teachers such as personal and professional conduct.
* It is important that teachers use reflection models such as Gibbs’s Reflection Cycle to critique their own performance
 | * Critique the links they have established between theory and practice
* Use research informed methods/results to offer insights into how curriculum and practice can be enhanced.
* To ensure progression through Substantive and Disciplinary knowledge which is enquiry based and plans for and assesses progress in pupils’ understanding of mathematical concepts and processes drawing from N.C, Ofsted Research Review and relevant reports e.g. Made to Measure and Understanding the Score
 | 1. Thinking back over the past 41 weeks of your ITE course, in what ways do you feel you have developed as a novice teacher in mathematics? For example, as a novice teacher of Maths, Geography or Physical Education? Don’t forget to include your university learning, all your placement experiences, plus your own personal reflections. | PB7 | WDS |
| CCF evidence base  | Hughes, D., Mann, A., Barnes, S., Baladuf, B. and McKeown, R. (2016). Careers education: International literature review. https://educationendowmentfoundation.org.uk/evidence-summaries/evidence-reviews/careers-education/ [Accessed 18 October 2018]. |
|  | **Consolidation Placement Ends** |