

Professional Learning Module

The ITE Partnership Curriculum in Science

Session Content

1. Supporting BSTs – concerns with progress, wellbeing and professionalism
2. Mentor meetings
3. The science curriculum and how this complements/builds on the core curriculum
4. Supporting BSTs with their subject knowledge development
5. Q & A

Supporting BSTs to develop their practice

- Reflective Reviews
- Weekly Meetings (WLPR)
- Co-planning/ team-teaching.
- Observations (of the BST) & LDR
- Observations (by the BST)
- Target setting
- Modelling good practice/sharing expertise

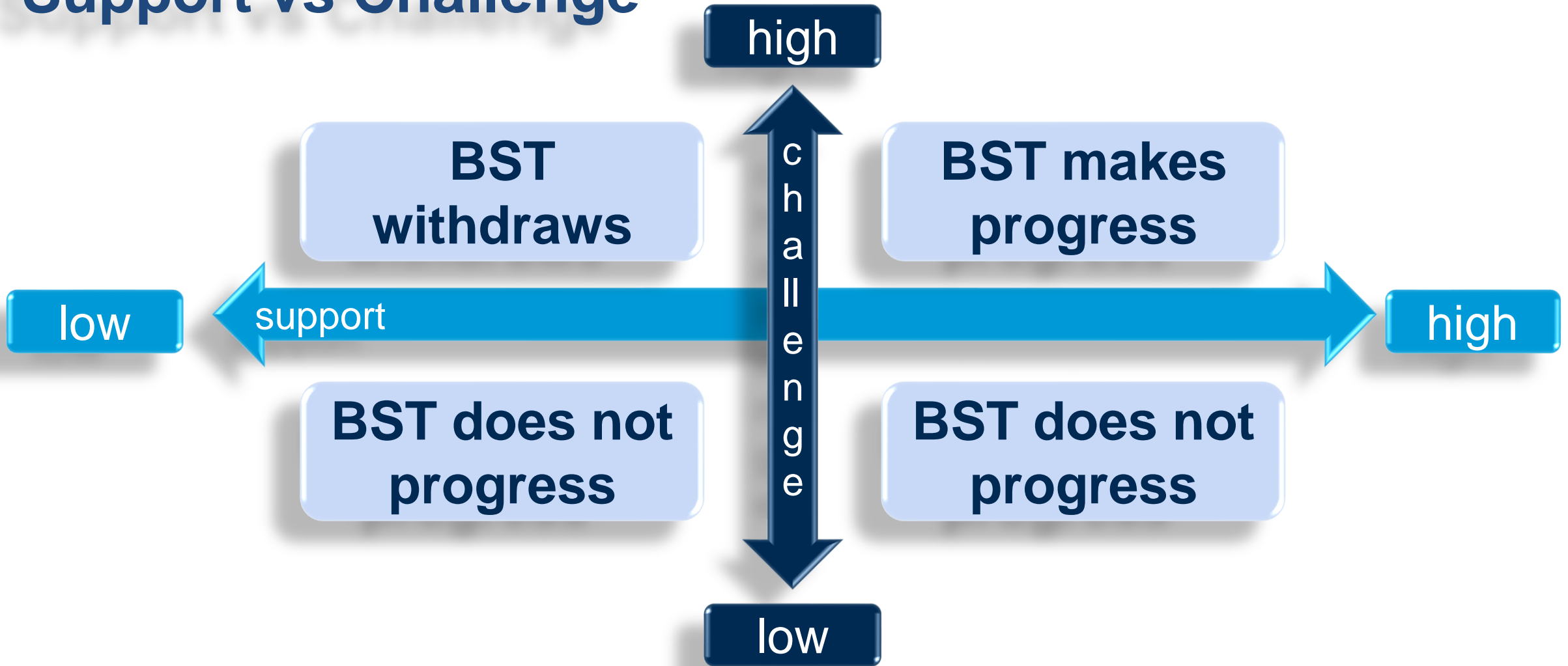


Assessment

Progress Review Point (4 phases)

Progress Portrait (assessment framework)

Support vs Challenge



Supporting BSTs

- progress
- wellbeing
- professionalism

What we have done at University

What has worked well for you?

Reflective Reviews

Reflective Reviews capture the BSTs experiences on the programme in terms of gaining, applying and refining their progress through the **ITE Partnership Curriculum**.

Students complete their reflective reviews at the end of each phase

Key to writing a successful reflective review is to:

- Reflect upon the knowledge, skills and understanding that you have learnt in a particular component of the ITE Partnership Curriculum and
- Explain how have you applied that knowledge in your own practice
- Explain what is the impact on your pupils' progress in the classroom

Weekly mentor meetings

What works well for you during your weekly meetings with your BST?

Science Curriculum - Intent

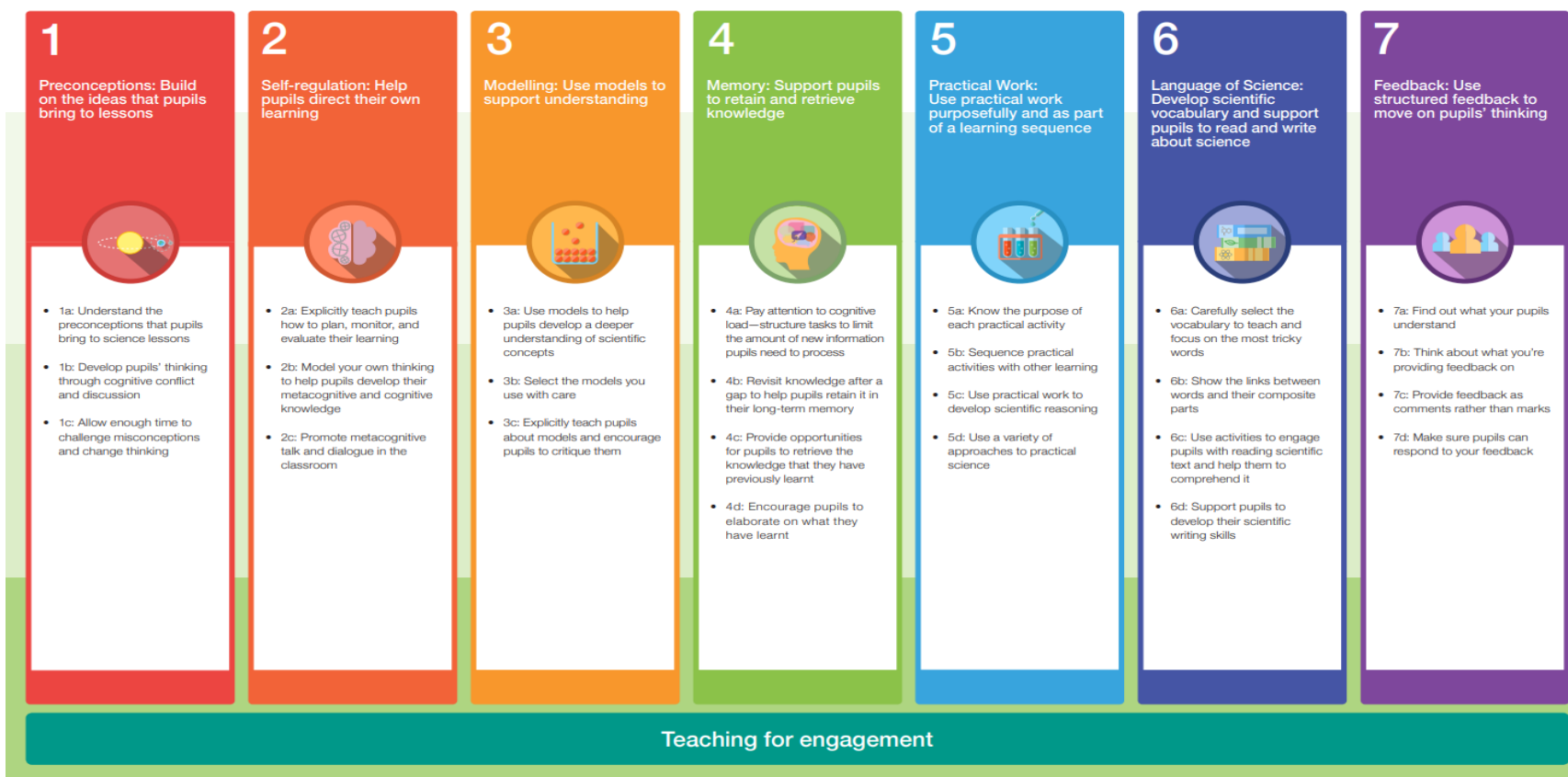
- **Bridge scientific theory and practice.** This includes gaining knowledge of a range of subject-specific pedagogy (challenging misconceptions, modelling, working scientifically, developing scientific literacy) and critically applying it to their practice.
- **Help BSTs communicate their substantive and disciplinary knowledge and passion for the subject.** This includes gaining knowledge of how to meet the learning needs of all pupils in science, how to inspire a sense of wonder and curiosity about the subject and promoting progress in it. By distinguishing between substantive and disciplinary knowledge, BSTs will be able to help pupils learn how scientific knowledge is established by scientific enquiry.
- **Understand and respond to the wider subject context (and BSTs' role within it).** This includes gaining knowledge of the continued importance of science in their own lives and society, coherence of science with other subject disciplines, the professional responsibilities associated with being a science teacher and developing a strong subject identity.

Research underpinning your subject curriculum



IMPROVING SECONDARY SCIENCE

Summary of recommendations



Our curriculum in brief:

- KS3 PCK sessions in B, C & P
- KS4 PCK sessions in B, C & P
- A level PCK sessions in B, C & P
- Adaptive teaching in science
- Purposeful enquiry in science
- Literacy/Numeracy in science
- Assessment in science
- Etc.

Pedagogical Content Knowledge PCK:

Those who understand: knowledge growth in teaching Shulman (1986)

"He who can, does. He who cannot, teaches."

PCK involves:

- **Organization in preparing and presenting instructional plans**
- **Evaluation [& reflection]**
- **Recognition of individual differences**
- **Cultural awareness**
- **Understanding youth**
- **Management**
- **Educational policies and procedures (Shulman 1986 p5)**







Science Curriculum – feedback

Do you have any feedback, suggestions or questions about the curriculum?



IMPROVING SECONDARY SCIENCE

Summary of recommendations

1	2	3	4	5	6	7
<p>Preconceptions: Build on the ideas that pupils bring to lessons</p>  <ul style="list-style-type: none"> 1a: Understand the preconceptions that pupils bring to science lessons 1b: Develop pupils' thinking through cognitive conflict and discussion 1c: Allow enough time to challenge misconceptions and change thinking 	<p>Self-regulation: Help pupils direct their own learning</p>  <ul style="list-style-type: none"> 2a: Explicitly teach pupils how to plan, monitor, and evaluate their learning 2b: Model your own thinking to help pupils develop their metacognitive and cognitive knowledge 2c: Promote metacognitive talk and dialogue in the classroom 	<p>Modelling: Use models to support understanding</p>  <ul style="list-style-type: none"> 3a: Use models to help pupils develop a deeper understanding of scientific concepts 3b: Select the models you use with care 3c: Explicitly teach pupils about models and encourage pupils to critique them 	<p>Memory: Support pupils to retain and retrieve knowledge</p>  <ul style="list-style-type: none"> 4a: Pay attention to cognitive load—structure tasks to limit the amount of new information pupils need to process 4b: Revisit knowledge after a gap to help pupils retain it in their long-term memory 4c: Provide opportunities for pupils to retrieve the knowledge that they have previously learnt 4d: Encourage pupils to elaborate on what they have learnt 	<p>Practical Work: Use practical work purposefully and as part of a learning sequence</p>  <ul style="list-style-type: none"> 5a: Know the purpose of each practical activity 5b: Sequence practical activities with other learning 5c: Use practical work to develop scientific reasoning 5d: Use a variety of approaches to practical science 	<p>Language of Science: Develop scientific vocabulary and support pupils to read and write about science</p>  <ul style="list-style-type: none"> 6a: Carefully select the vocabulary to teach and focus on the most tricky words 6b: Show the links between words and their composite parts 6c: Use activities to engage pupils with reading scientific text and help them to comprehend it 6d: Support pupils to develop their scientific writing skills 	<p>Feedback: Use structured feedback to move on pupils' thinking</p>  <ul style="list-style-type: none"> 7a: Find out what your pupils understand 7b: Think about what you're providing feedback on 7c: Provide feedback as comments rather than marks 7d: Make sure pupils can respond to your feedback
Teaching for engagement						

How can you support the development of BSTs subject knowledge.

- Observation of BST's practice
- Observation of BST's practice prompts
- Subject Knowledge development
- The BST pebble pad – observation prompts
- Reference to section 3 of the CCF
- Subject Knowledge Audits

Subject, <u>pedagogical</u> and curricular knowledge	
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SUGGESTED PROMPTS

Demonstrates secure subject knowledge and pedagogy, addresses misconceptions.

Inspires pupils with a love for their subject

Explanations are concise and clear.

Good focus on subject specific vocabulary.

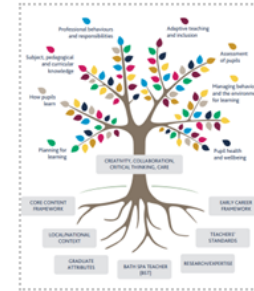
Effective use of modelling and questioning.

Subject knowledge within our curriculum

Restricted - Other

Secondary Science PGCE Core and Subject Curriculum Summary: Phase One and Two

Alongside the Core Curriculum BSTs study their Subject Curriculum in Science. The subject sessions build upon the Core Curriculum, linking with the [ITT Core Content Framework](#) (CCF) to support the application of the general knowledge and skills taught, to the science setting.



Curriculum Component	Core Curriculum content Phase One and Phase Two	Subject Curriculum content Phase One and Phase Two
1. Professional Behaviours and Responsibilities	<ul style="list-style-type: none"> - Professional identity, ethics and values, safeguarding, the law, Prevent, British values, using AI in education - Critical thinking and reflective practice, engaging with research - Teacher well being and workload 	<ul style="list-style-type: none"> - Responsibilities as a teacher of Science including health and safety and belonging to a wider subject community (e.g. RSC, IoP, ASE) - Responsibility for personal subject knowledge development (and developing reflective practices and metacognition) - Developing a clear subject identity. - Being a professional in the science department

Sharing approaches:

- **Develop deeper understanding with models.** Education in Chemistry (2019)
<https://edu.rsc.org/feature/develop-deeper-understanding-with-models/3010519.article>
- **Practicals: Why you should take them slow.** Education in Chemistry (2020)
<https://edu.rsc.org/ideas/practicals-why-you-should-take-them-slow/4012186.article>
- **Scientific enquiry- enquiry-based learning.** ECDC (2018)
<https://www.tandfonline.com/doi/abs/10.1080/03004430.2019.1653554>
- **Misconceptions about energy change.** Education in Chemistry (2024)
<https://edu.rsc.org/cpd/chemical-energetics-words-matter/2000004.article>

A quick check...

- Do you have access to the online handbook?
- Are your colleagues aware of the BST pebble pad? Can you access?

Any questions?