The PSTT Primary Science Enhancement Award for Initial Teacher Education 2024/25

PSEA HANDBOOK

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The PSTT Primary Science Enhancement Award for Initial Teacher Education

Summary of background and rationale

There are currently several different routes into teaching in the UK:

- University based courses, e.g. B.Ed, B.A. with QTS, PGCE.
- School based training, e.g. Schools Direct, Teach First, SCITT, and some academy trusts run their own programmes.

The science component of these different teacher education programmes varies significantly in both quantity and quality. Teachers might start their career having had a few hours of input in science, weekly sessions of science over one or more terms or anything in between, and there are some Initial Teacher Education (ITE) providers who offer a science specialism course. What is covered in the input provided also varies hugely. Trainees may not feel confident with their own science background knowledge, and this can influence the nature of the course content provided at the ITE stage, i.e. a large proportion of time might be spent on developing more secure science background knowledge, and as a result, less time might be spent on developing pedagogical understanding.

PSTT has developed the Primary Science Enhancement Award scheme for ITE with the aim that this will be open to any trainee teacher wanting to increase their experience and understanding of teaching and learning in primary science. The scheme supports the trainee to undertake additional activities and development in primary science during their ITE phase. It draws on rationales, processes and resources developed by the Primary Science Teaching Trust's Teacher College, the Primary Science Teaching Trust's Cluster Programme, the Primary Science Quality Mark, and by Stranmillis College, Belfast (who developed their own primary science accreditation scheme for their trainee teachers).

Aims of the scheme

For PSTT:

- To develop a recognised scheme for supporting ITE providers and trainee teachers
- To connect and build supportive relationships with teachers as they start their careers

For Initial Teacher Education providers:

- To have access to a scheme to enhance their support for trainee teachers in science
- To stay up to date with primary science education developments through engaging with PSTT and their wider collaborations

For trainee teachers:

- To start their careers with increased competence and confidence to teach science
- To be confident to take up a position of school leadership in science

For schools

- To make more informed/confident appointments of teachers/science subject leaders

History of the PSEA

The scheme was initially piloted over two years, with a small initial pilot involving 4 ITE providers and 30 trainee teachers in 2020/21 and a larger pilot involving 15 ITE providers and 74 trainees in 2021/22. Trainee and tutor feedback from the pilots were used to make improvements to the process and to support the planning and implementation of the official launch of the award in 2022/23. The award now goes from strength to strength with more institutions joining each year.

Survey outcomes show that trainees and tutors who have participated in the award have found the scheme to be a worthwhile process; trainees have also reported increased confidence to teach science, and a greater awareness of where to find support for this.

'I think the scheme is incredibly beneficial for any level of confidence in science teaching.'

'The scheme was really helpful. I particularly enjoyed the first two compulsory activities as these encouraged me to have a look at a range of articles to develop my science teaching and during this I came across loads of ideas I would like to take to the classroom!'

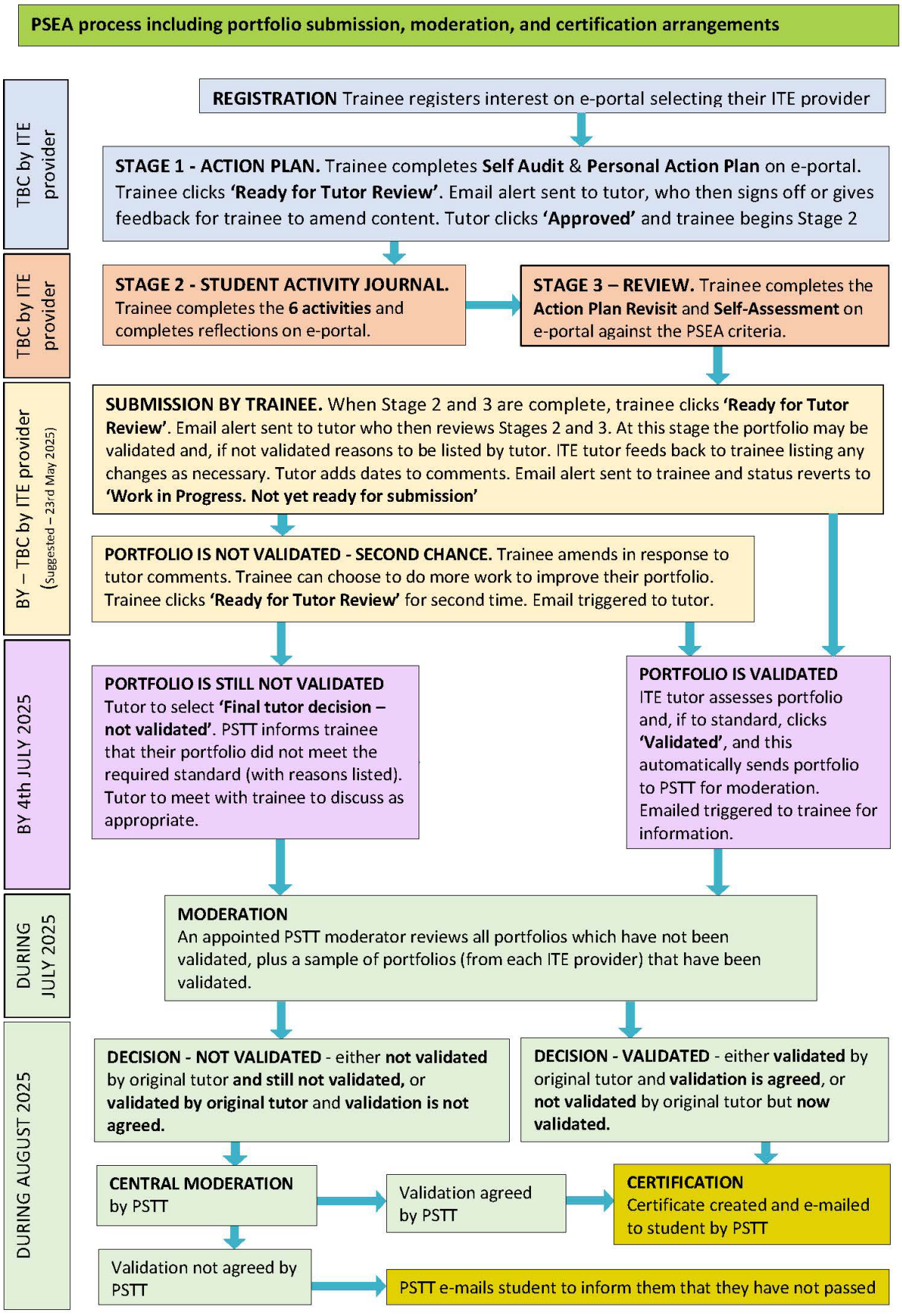
'I think the scheme is a great opportunity for training teachers as it allows for more importance to be placed on science and its delivery, so there is a higher likelihood that children will be inspired to pursue science in the future.'

Principles of the scheme

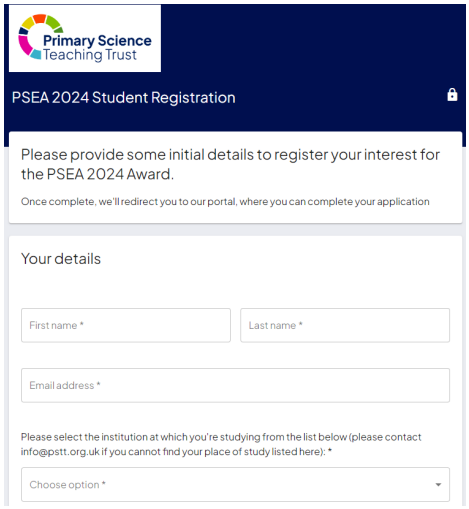
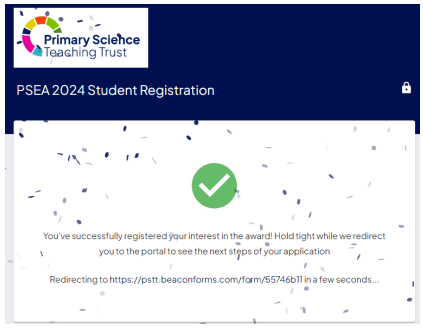
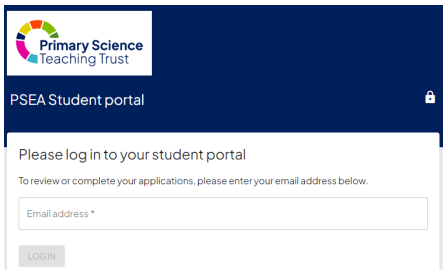
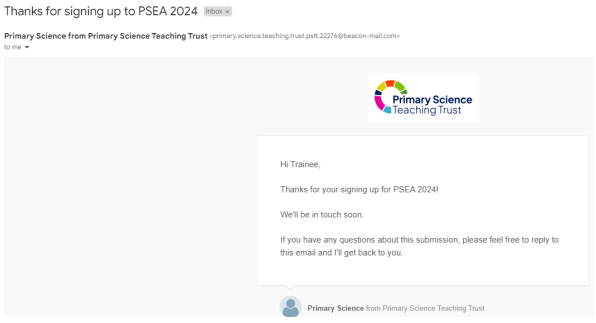
The award is made to trainee teachers who successfully and actively engage in reflective practice and development in primary science beyond the statutory content of their initial teacher education phase. At the start of the scheme, in consultation with their ITE tutor, the trainee will identify their intended targets and devise their own programme of reflective activity and timeline for this. As far as possible the trainee should be responsible for organising additional/enrichment experiences for themselves. It can be helpful for the trainee that, where possible, they align these to their school placements. The ITE provider will be responsible for agreeing any internal timelines for the trainee and giving additional support as appropriate. PSTT will make relevant information, supporting documents, access to the e-portal, and key dates available on the PSTT website.

The trainee is responsible for producing a portfolio of evidence via the e-portal. At the end of the process, this will be signed off by their own ITE tutor before it is submitted for moderation. The 'PSEA process for portfolio submission' is shared on page 4. The Primary Science Enhancement Award will be made at one level, i.e. the standard has been reached or not, and a certificate will be issued by PSTT to all trainees whose portfolios meet the standard. The purpose of the certificate is to verify that the trainee completed the scheme and has engaged with PSTT, the Primary Science Quality Mark (PSQM) and the Association for Science Education (ASE); the logos of these three organisations will be included on the certificate.

Process and timeline for 2024/25

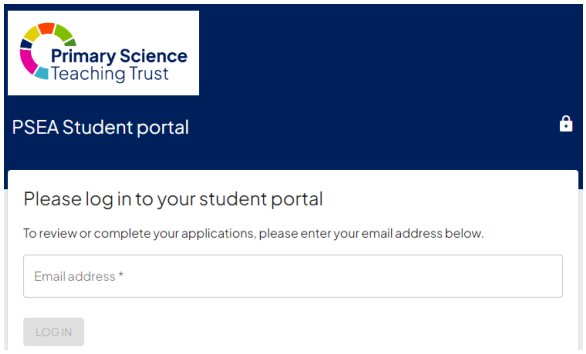
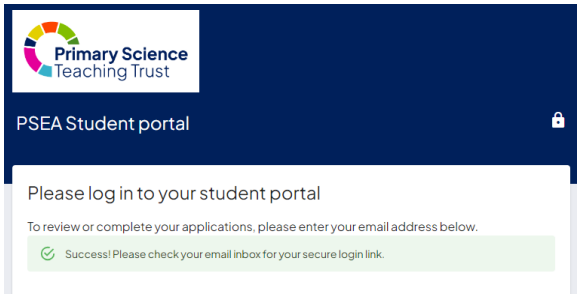
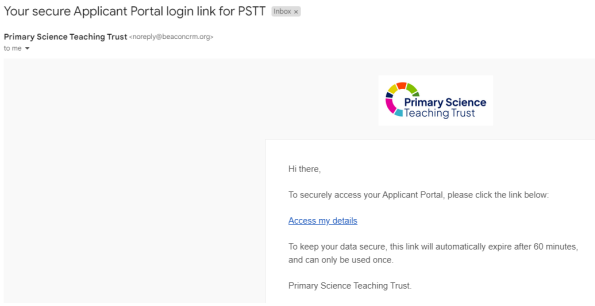
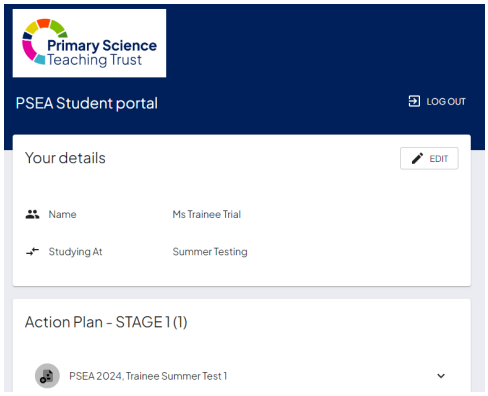


Trainee registration instructions for e-portal

• Follow this link to register.	[Primary Science Teaching Trust - PSEA 2024 Student Registration (beaconforms.com)]
• Add your name. • Add the email address that you will use to login and manage all information pertaining to the award. • Select your organisation from the list. • Check you have selected the correct institution. • Complete the gender and DOB sections. • Tick the methods of contact you would like to consent to. • **Please ensure you have selected to be contacted by email.** • Click 'SUBMIT'.	
• You will then see this confirmation screen.	
• In a few seconds this will direct you to the login screen.	
• You will receive an email to the address you supplied on the registration form.	

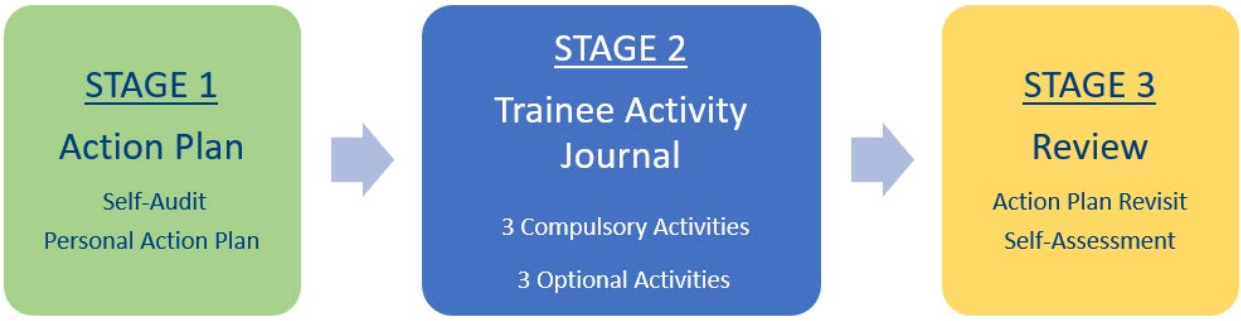
Trainee instructions for e-portal LOG IN

NB: After registering you will automatically be directed to the login website. Thereafter please use the link below to access your account.

• Follow this link to log in.	[Primary Science Teaching Trust - PSEA Student portal (beaconforms.com)]
• Enter your email address. • Please make sure you use the email address you used to register. • Click 'Log In'.	
• You will receive this confirmation message.	
• Return to your email inbox to find the email with the link to log in.	
• Click on the 'Access my details' link. • This secure process will be followed each time you log in as it removes the need for a password.	

Portfolio of evidence

Trainees should use the e-portal to fulfil the written components of the PSEA, which is split into 3 main stages:



When the trainees are ready for the tutor to check their Action Plan (Stage 1) and Review (Stage 3) they select the 'Ready for Tutor Review' option, and this will automatically trigger an email to let their tutor know the either the Action Plan section or Review section is ready to be assessed. *N.B. the tutor will look at the work completed at Stages 2 and 3 together at the end of the process.* ***No email is triggered to the tutor during Stage 2.***

The purpose of the portfolio is to show that the trainee teacher:

- has actively engaged with PSTT, PSQM and the ASE;
- is able to reflect critically on activities undertaken and demonstrate the impact that these have had on their understanding and skills of the teaching, learning, leadership and assessment of science.

(Prompts to help trainees complete each section are shared on pages 13-24)

Action Plan - Stage 1

This consists of a **Trainee Self-Audit** and a **Personal Action Plan.** The Trainee Self-Audit allows the trainee to consider their aims for joining the award. Then they reflect upon and document their current strengths in the teaching and learning of primary science. The trainee then sets their development targets. The Personal Action Plan allows them to select the optional activities that will help them to achieve their personal development targets, alongside the compulsory activities.

Trainee Activity Journal – Stage 2

This includes the completion of six reflective activities: three **Compulsory Activities** plus three from the **Optional Activities** list. The trainee then documents each activity on the e-portal using the following headings:

- Details of the activity
- Outcome for children
- Written reflection giving a critical analysis of the impact the activity has had on the trainee's practice

Review - Stage 3

This consists of the **Action Plan Revisit** and the **Self-Assessment** sections. The **Action Plan Revisit** allows the trainee to return to reflect on their initial aims and strengths. It also allows them to review their initial targets to explore and document their progress. The **Self-Assessment** section allows the trainees to evidence how the completion of the activities has enabled them to meet the PSEA criteria.

Criteria for the Primary Science Enhancement Award for Initial Teacher Education

	Compulsory activities			Optional activities								
	A) ASE PS article	B) PSTT resource	C) PSQM interview	d	e	f	g	h	i	j	k	l*
A. Personal criteria												
1. An understanding of the importance of teaching and learning science and its impact for children.												
B. Teaching and learning criteria												
2. An awareness of effective strategies for teaching and learning for all children.												
3. An understanding of the types and skills of science enquiry and the value of these for learning science.												
4. An understanding of common misconceptions in science teaching and learning.												
5. An understanding of science assessment strategies that are valid, reliable, and meaningful.												
C. Subject leadership criteria												
6. An awareness of the role of an effective science subject leader (including progression of science concepts, the value of enrichment activities, and professional monitoring processes).												

	Activity strongly linked to the criteria
	Activity linked to the criteria

Compulsory Activities

A. Choose an article from the Association for Science Education publication Primary Science and apply the strategy or approach described with a group/class of children. Reflect on the outcomes, with reference to the article.
B. Choose one of the selected PSTT free resources and try it with a group/class of children. Reflect on the learning outcomes and in particular on the questioning you used.
C. Interview a science subject leader who has recently completed PSQM to find out how they identified the priorities for their school and the steps they undertook to address these.

Optional Activities (three to be chosen from the following):

d. Development of subject knowledge in one or more relevant areas
e. Observation of a science specialist teaching a science lesson
f. Delivery of an extra-curricular activity, e.g. after school science club, family science event
g. Presentation at a network meeting, conference or other science education event
h. Trial of a Teacher Assessment in Primary Science (TAPS) focused assessment task
i. Writing of an article for publication – blog or journal
j. Trial of an Explorify activity with a group/class of children
k. Critical review of a lesson plan/activity from a science scheme of work (free or commercial)
l. Engagement in other pedagogical development or action research activity – to be agreed with ITE tutor

Supporting resources

Compulsory Activities

A) Choose an article from the Association for Science Education publication Primary Science that describes a particular strategy or approach. Try this with a group/class of children. Reflect on the outcomes, with reference to the article.

Trainee teachers are encouraged to look for an article themselves; any article that presents an approach or strategy for teaching science can be chosen, and the ITE tutor will be able to provide advice about whether or not a particular article would be suitable. Alternatively, the list of articles included here would be suitable for this task and are available to download from the PSTT website.

Article title	**Date, issue number, page**
Developing talk in the primary science classroom	January 2020, 1590, p12
Big books or little books	January 2020, 1590, p47
Moving a wow to an understanding: demystifying science	September 2019, 159, p9
Could using frames make science more accessible for children with special learning requirements?	September 2019, 159, p29
Grab a bucket, we're taking science outdoors	February 2020, 161, p33
Learning about STEM careers through science and drama	June 2020, 163, p14

B) Choose a free PSTT resource from the list and try it with a group/class of children. Reflect on the learning outcomes and in particular on the questioning you used.

Selected PSTT resources – choose one of the following:

Resource	Link	Notes
A **Why and How? Challenge** from the PSTT Newsletters	https://pstt.org.uk/what-we-do/why-how-newsletter	Practical science challenges that can be done with a small group or whole class.
An activity from **Science for One**	https://pstt.org.uk/resources/curriculum-materials/Science-for-One	Activities that have been designed for doing practical science while maintaining social distancing.
Starters for science	https://pstt.org.uk/resources/starters-for-science/	
An activity from **City Science Stars**	https://pstt.org.uk/resources/curriculum-materials/city-science-stars	Lesson ideas that are linked to football and to space – many can be done outside.
An activity from **EYFS**	https://pstt.org.uk/resources/play-observe-ask/	
An activity or approach from **Inclusive approaches for Primary Science: a guidance booklet**	https://pstt.org.uk/support/support-for-school-leadership-sencos/	

C) Interview a science subject leader who has recently completed PSQM to find out how they identified the priorities for their school and the steps they undertook to address these.

Primary Science Quality Mark is a comprehensive, one-year, evidence-informed, professional development and school improvement programme which equips primary science subject leaders with the knowledge, confidence, and expert support they need to transform the quality and profile of science education in their schools. The PSQM empowers science subject leaders to make a positive and lasting impact on science teaching and learning.

The ITE provider and PSTT will liaise with PSQM to facilitate the arrangements for the interviews. A number of hour-long twilight meetings will be arranged during the spring term. They will be conducted via an electronic meeting platform. Dates and times for these meetings will be shared with ITE tutors so that they can be disseminated to their trainees. The trainees will be expected to sign up for one of the meetings in advance.

If an individual ITE tutor is in contact with a science subject lead who has recently completed PSQM (within the last two years), it is acceptable for them to arrange a session with the trainees at their institution. The interviews could be virtual or face to face, depending on circumstances. They could also be done as a group, i.e. several trainee teachers could interview one subject leader together.

Where the ITE provider is leading a PSQM hub, the interview could be carried out as part of a hub meeting, or (at the discretion of the ITE tutor) the task could be adapted to enable trainee teachers to observe a hub meeting rather than carry out an actual interview with a subject leader.

Optional Activities

d. Development of subject knowledge in one or more relevant areas

There are numerous free resources available for developing subject knowledge. As well as improving their own conceptual knowledge and understanding, the trainee teacher should be encouraged to consider common misconceptions or alternative ideas and how children's ideas might be expected to change as they move from early years to the beginning of the secondary phase of their education.

The following resources are recommended:

- ReachOut CPD units https://www.reachoutcpd.com/
- STEM learning remote lessons https://www.stem.org.uk/remote-lessons#upcoming-lessons

The learned societies and other organisations also have suitable supporting resources that might be useful:

- The Institute of Physics https://www.iop.org/education/school-and-college-trainees
- The Ogden Trust https://www.ogdentrust.com/about-us/news/the-ogden-cpd-journey/
- The Royal Society of Biology https://www.rsb.org.uk/education/teaching-resources
- The Royal Society of Chemistry https://edu.rsc.org/primary-science/boost-your-knowledge

e. Observation of a science specialist teaching a science lesson

The trainee teacher should arrange this observation and share the purposes of it with the teacher they are observing. The trainee teacher should be encouraged to identify a focus for their observation in advance. This could be very specific, e.g. teacher questioning, strategies for assessment of the skills of science enquiry, or it could have a broader remit, e.g. ensuring participation. Whatever the focus, the trainee teacher should ensure that their records are more than just an account of the activity they observed; they should record the impact of the activity on the teachers and children and what this means for children's learning and progress in science.

f. Delivery of an extra-curricular activity, e.g. after school science club, family science event

If this activity is selected, the trainee teacher should ensure that they explore how the extra-curricular activity is different from curriculum science, and discuss the impact on children (and families where appropriate) of engaging in this type of informal science experience.
Suggestions for ideas to use for an extra-curricular activity, e.g. an after school science club or a family science event.

A STEM club activity from Engineering our World, Earth Explorers or Challenge Chasers	https://pstt.org.uk/resources/curriculum-materials/childrens-university-stem-clubs	A series of practical activities and challenges accredited by the Children's University.
A Science Fun at Home practical activity	https://pstt.org.uk/resources/curriculum-materials/Science-Fun-at-Home	Designed for children to use at home during lockdown but equally good for science clubs or family science events.
A Learning Science Together activity or set of activities	https://pstt.org.uk/resources/curriculum-materials/learning-science-together	Set up to be used as a family learning resource but activities could be stand alone and done with just children.
My Science Club	https://www.myscienceclub.com/free-resources/	Some free resources to support you in running a science club session.

g. Presentation at a network meeting, conference or other science education event

Sharing expertise and experience by presenting to other trainee teachers or teachers offers the trainee teacher an opportunity to consolidate their own understanding, and this can be very valuable. This should be an event that is an additional element and should not be part of the training course. The focus should be on enabling the audience to improve their own practice, so if a classroom idea is being shared, it is important to ensure that the rationale for the idea and its impact are also shared. The trainee teacher should reflect on how presenting changed their own competence and/or confidence with teaching and learning in science, and how their own ideas changed as they prepared for the presentation.

h. Trial of a Teacher Assessment in Primary Science TAPS focused assessment task

The focused assessment tasks in the TAPS project are activities for practical science that support the development of particular skills within a whole enquiry.
https://pstt.org.uk/resources/curriculum-materials/assessment

The special issue of ASE's Primary Science (151) could provide useful background information and support for this activity. In particular the following articles might be of interest:

- Making more effective use of moderation, p10
- Supporting staff to develop a shared understanding of science assessment, p13
- Assessment of WS – the TAPS focused assessment approach, p15

i. Writing of an article for publication – blog or journal

As with presenting, writing a blog piece or article also provides an opportunity for the trainee teacher to consolidate their own understanding, and this is also very valuable. The focus should be on enabling the audience to improve their own practice, so if a classroom idea is being shared, it is important to ensure that the rationale for the idea, and its impact are also shared. The trainee teacher should reflect on how writing changed their own competence and/or confidence with teaching and learning in science, and how their own ideas changed as they went through the writing process. It is unlikely that an article will be at the stage of being fully published in this short time frame, but the tutor should be satisfied that at least the first draft has been written and/or submitted.

j. Trial of an Explorify activity with a group/class of children

Explorify is a free resource originally developed by the Wellcome Trust. Using very high-quality images and video, the activities are designed to encourage discussion and debate, and to get children thinking like scientists. The focus should be on developing teacher questioning and how this can support the quality of children's discussions.
Visit https://explorify.wellcome.ac.uk/ to register and download the activities.

k. Critical review of a lesson plan/activity from a science scheme of work (free or commercial)

The purpose of this activity is for the trainee teacher to demonstrate that they can critically consider an existing resource or published scheme that is either freely or commercially available. The trainee teacher should select one lesson plan or activity from the resource and examine how effective they think it would be for children's learning in science. While there is only scope to review one lesson/activity, this should be done in the context of the wider topic, and some comparisons should be made with other resources that the trainee teacher is familiar with.

l. *Engagement in other pedagogical development or action research activity – to be agreed with the ITE tutor

This will be entirely at the discretion of the ITE tutor. The tutor should seek advice from PSTT if they are unsure whether the proposed activity will support the trainee to meet the criteria.

Trainee support for completing the PSEA documentation

Questions to support the completion your Action Plan – Stage 1

Note: This is not an exhaustive list of questions. In your reflection, you should include any aspect of teaching and learning, assessment or leadership of primary science that is relevant to you.

Personal aims for taking part in the scheme – rationale statement

Your ITE course should provide you with appropriate guidance for teaching primary science. Here, you should say what *extras* you are looking to gain from taking part in the PSEA.

These questions may help you to identify how taking part in PSEA may be helpful to you:

- Are you confident talking about science and how children learn science?
- Are you confident teaching practical science lessons?
- Are you confident with developing children's skills, including their understanding of the different enquiry types? https://pstt.org.uk/resources/enquiry-approaches/
- How will you find suitable science resources to support you to teach primary science?
- How will you know whether the resources you use are of good quality?
- Are you aware of the impact on children of different strategies for teaching and learning (including assessment) of science?
- Are you able to reflect critically on the activities that you have used with children?
- Would you like to be a subject leader when you achieve QTS?
- How do you think PSEA will help your employment prospects?

Aim to be very specific, e.g.

"I like teaching science and I want to be a great science teacher so that children enjoy learning about science" would be better written as:

I would like to know where to find good quality science resources to use in the classroom to enhance my science teaching. Through taking part in the PSEA scheme, I believe that I will become more knowledgeable about organisations that support primary science and which resources are the best to use and will help me to deliver challenging and exciting lessons for children.

"I would like to be a subject leader of science so that I can help other teachers to teach good science lessons" would be better written as:

In the future, I would like to be a subject leader in science. I have a reasonable knowledge of science and I hope to develop this more so I could share this with other teachers. I do not have any experience of recent developments in primary science teaching and learning and I am not sure which resources are the best for improving children's knowledge and understanding.

Through taking part in the PSEA scheme, I will be able to try out some resources and learn to reflect on the impact of these resources on children's learning.
"The PSEA will help me to get my first teaching post" would be better written as:

By doing the PSEA, I can demonstrate to potential school employers that I am confident with teaching science, that I am able to reflect on the impact of teaching strategies and resources that I use, and that I have a good knowledge of where to find further support for teaching primary science (which I could share with other staff).

Current strengths in teaching and learning in **primary science**

These questions may help you to identify your strengths:

- Which science topics do you feel most confident to teach?
- How have you engaged children in new science topics?
- What has gone well when teaching practical science lessons? Why did it go well?
- What do you know about different types of science enquiry, and enquiry skills in science?
- Where do you look for new teaching ideas?
- How could you link the primary science curriculum to real-life applications?

Aim to be very specific, e.g.

"My favourite science is chemistry and biology" would be better written as:

I am confident about my subject knowledge in the chemistry and biology parts of the primary science curriculum because I have A level chemistry and GCSE biology.

"I love practical science sessions" would be better written as:

I have seen how much children enjoy hands-on science lessons and I know children are more likely to be learning when they are engaged. I feel confident to use practical enquiry approaches. I know about the different types of enquiry and that children need to learn how to choose the best approach for what they are trying to find out.

"I am enthusiastic about teaching primary science" would be better written as:

I like to make links between primary science topics and real-world applications which helps make science exciting for children. *I like setting up fun contexts for science enquiry.*

Areas for development in teaching and learning in **primary science**

These questions may help you to identify areas for development:

Which science topics do you feel least confident to teach?

- What have you found difficult about planning a science lesson?
- What has not gone so well in practical science lessons? Why might this have been?

- Are you aware of the different types of enquiry and examples of these? https://pstt.org.uk/resources/enquiry-approaches/
- Are you aware of the different skills of enquiry and examples of these?
- https://pstt.org.uk/resources/enquiry-skills/
- What kind of advice or support do you seek from others to help you with teaching science?

Aim to be very specific, e.g.

"I need to revise some of my physics subject knowledge" would be better written as:

Revise the physics topics of Electricity and Forces, and find out about appropriate vocabulary for primary children, and the common misconceptions they might have in these topics.

"To get better at teaching practical science lessons" would be better written as:

I need to learn more about enquiry types and try them out with children to gain confidence in how the different types help children answer different types of question.

"I find it hard to engage the children" would be better written as:

I need to work at setting up exciting science lessons that engage the children right away. I would like to get better at linking science with other curriculum areas or contexts

You only need a maximum of 5 targets and these need to be listed using Roman numerals: i, ii, iii, iv and v.

Questions to support the completion of your Trainee Activity Journal - Stage 2

Reflective writing

The purpose of the piece of reflective writing at the end of each activity is for you to demonstrate a critical analysis of the impact the activity has had on your practice, and how the activity has contributed to fulfilling the criteria for the enhancement award.

Questions to prompt critical analysis

Role of the teacher

How does a teacher choose the appropriate level of challenge in a lesson?
How does changing the pace of the lesson affect learning outcomes?
What kind of adaptations might a teacher make to accommodate the particular needs of a child or group of children?
How does a teacher use questioning to support learning? What kinds of questions are effective in different learning situations?
What is an effective way for a teacher to improve their own subject knowledge and understanding?
How does the teacher ensure that children work safely in practical science? For up to date health and safety advice please contact your organisation's provider and link to CLEAPSS and SSERC?

Children's learning

What sort of activities or approaches in science lead to effective learning? Why?
What are the advantages and disadvantages of different approaches?
How can children be supported to learn from each other?
What are the common misconceptions children might have? How can these be addressed?

Children's attitudes

What conditions lead to high levels of participation in, and enjoyment of, science? Why is this?
What are the wider benefits for children of having a positive experience of science?

Assessment

What are the challenges of assessment for learning? How can you overcome these?
How do you know if your assessments are reliable and valid?

Supporting other teachers (through writing or presenting)

How has supporting other teachers changed your own competence and/or confidence with teaching and learning in science? How did your own ideas change as you prepared?
What impact do you think you have had on other teachers and their practice? How do you know this?

Science leadership

What are the key elements of the science subject leader role? Why are these important?
What are the most challenging aspects of leading science in a primary school? Why?

Inclusion
How do you ensure that all children take part and see themselves as scientists?

Compulsory Activity A – ASE Article

Details of activity:
Title, author, issue number and date of article
Brief explanation of article
Brief rationale for choosing article
Number and age of children group/class
Expected learning outcomes
Outline of the lesson content

Outcome for the children:
Did the children develop their enquiry skills? https://pstt.org.uk/resources/enquiry-approaches/
What substantive science knowledge did the children develop?
What misconceptions were addressed?
What changed for the children?

Reflections on practice:
What links were there between the theory from the article and practice?
How did the experience of using the information from the article change your planning and teaching?
How did the information from the article support effective learning?
What changes will you now make to your future practice?

Compulsory Activity B – PSTT resource

Details of activity:
PSTT resource chosen
Brief explanation of resource
Brief rationale for choosing the resource
Number and age of children group/class
Expected learning outcomes
Outline of the lesson content

Outcome for the children:
Did the children develop their enquiry skills? https://pstt.org.uk/resources/enquiry-approaches/
What substantive science knowledge did the children develop?
What misconceptions were addressed?
What changed for the children?

Reflections on practice:
What links were there between the theory from the resource and practice?
How did the resource support effective learning?
How did the experience of using the information from the resource change your planning and teaching?
What changes will you now make to your future practice?

Compulsory Activity C – PSQM Interview
Details of activity: Select three aspects which you heard about from the science subject leaders. These may focus on ASPECTS WHICH AFFECTED THE TEACHERS. Suggested topics may include: Auditing the school's needs in science Resourcing for science Supporting colleagues Monitoring in science Outcome for the children: Select three aspects which you heard about form the science subject leaders. These may focus on ASPECTS WHICH AFFECTED THE CHILDREN. Suggested topics may include: Assessment in science Progression in science Raising the profile of science Enrichment for science Reflections on practice: What are your perceptions of the role of the science subject leader following the interview? How did the subject leader identify priorities in their school? What steps did the subject leader take to address the needs they had identified? What changed for the children as a result of the measures introduced? What are your main take aways from this session?

Optional Activity d - Development of subject knowledge in one or more relevant areas
Details of activity: Topic chosen Rationale for choosing this topic Resources used to support learning Outline of conceptual understanding developed Outline of key points of progress made Outcome for the children: What are the misconceptions commonly held in this area of science? Why is this? What suggestions do you have about how to challenge misconceptions? What potential activities and learning opportunities are there for this topic? Reflections on practice: How will your learning within this topic affect your teaching? How will you approach the potential misconceptions children may hold for this topic area? What teaching approaches will you now use to teach this topic? What transferable skills have you developed, when furthering your understanding of this topic, that can be used to improve your understanding of other science topics?

Optional Activity e - Observation of a science specialist teaching a science lesson
Details of activity: Number and age of children group/class Expected learning outcomes Outline of the lesson content

Outcome for the children:
Did the children develop their enquiry skills? https://pstt.org.uk/resources/enquiry-approaches/
What substantive science knowledge did the children develop?
What changed for the children?
How did the teacher ensure that children worked safely in practical science?

Reflections on practice:
What specific strategies did the teacher use that promoted children's learning?
Give examples of questions that the teacher used and the effect these had on children's learning
Reflect on the teacher's role in supporting learning in science
What are your main take aways from this session?
What will you do differently in your future science teaching as a result?

Optional Activity f - Delivery of an extra-curricular activity, e.g. after school science club, family science event

Details of activity:
Details of club or event
Number of children/families in group/class/club
Expected outcomes
Outline of the club/event content

Outcome for the children:
What changed for the children/families in terms of science learning?
What changed for the children/families in terms of engagement with science?
What are the key aspects of the role of the organiser?
Other observations

Reflections on practice:
Explore the value of science clubs or events
What are your main take aways?
What will you do differently in your future science teaching as a result?

Optional Activity g - Presentation at a network meeting, conference or other science education event

Details of activity:
Number of attendees or participants
Description of event
Expected outcomes
Nature and outline of the content of the presentation

Outcome for the children:
This reflective section can focus upon both the participants at the session and also the children that the participants will teach after listening to your presentation.
What changed for the participants?
What will change for the children as a result of the participants listening to your session?
What new learning is there likely to have been for the participants?

Reflections on practice:
How did the preparation for doing the presentation support your own development? What did you learn?
What would you do differently another time?
Explore the value of presenting and sharing with colleagues.

Optional Activity h - Trial of a Teacher Assessment in Primary Science TAPS focused assessment task

Details of activity:
Title of TAPS resource
Brief explanation of resource
Brief rationale for choosing resource
Number and age of children group/class
Expected learning outcomes
Outline of the lesson content

Outcome for the children:
How did the activity enable you to make formative assessments of the children's skills?
How did the children's learning change as a result of your formative assessments?
How did you ensure that children worked safely?
Give examples.

Reflections on practice:
Reflect on how the activity supported active assessment
What are your main takeaways?
What will you do differently in your future science teaching as a result?

Optional Activity i - Writing of an article for publication – blog or journal

Details of activity:
Title of the article
Where it is/will be published
Intended audience
Key points made in the article

Outcome for the children:
Consider the outcome for the reader as well as the subsequent impact the article will have on the children the reader will teach.

How do you hope to change the way the reader thinks?
How do you hope to change their practice?
What impact were you looking to make on the reader and on the children they will teach?
What other observations do you have about completing the writing?
What feedback did you receive from your tutor and/or a reader?

Reflections on practice:
Reflect about the value of sharing your views and ideas with colleagues through writing.
How did planning and writing the article support your own development and understanding?
What were your key considerations about how to engage the reader?
What are your key take aways from completing this activity?

Optional Activity j - Trial of an Explorify activity with a group/class of children
Details of activity: Title of Explorify activity chosen Rationale for choosing this activity Number and age of children in group/class Expected learning outcomes Outline of the content of the activity Outcome for the children: What were the key features of the children's discussion? What were the questions that you asked that led to effective discussion and debate between the children? How has the activity helped the children to think more like scientists? How did you ensure that children worked safely? Reflections on practice: Reflect on the role of effective group talk in developing understanding. What are your key take aways from completing this activity? What will you do differently in your future science teaching as a result?
Optional Activity k - Critical review of a lesson plan/activity from a science scheme of work (free or commercial)
Details of activity: Resource or scheme chosen Rationale for choosing this resource or scheme Stated learning outcomes from using the resource/scheme Outcome for the children: How well will it support children's learning? https://pstt.org.uk/resources/enquiry-approaches/ https://pstt.org.uk/resources/enquiry-skills/ What are its strengths? Why? What are its weaknesses? Why? How does it compare with other resources or schemes you are aware of? How does the scheme ensure that children work safely? Reflections on practice: What advice would you give to another teacher who was going to use the resource or scheme? Reflect on the value for learning of a published resource. What are your key take aways from completing this activity? What will you do differently in your future science teaching as a result?

Optional Activity l - * Engagement in other pedagogical development or action research activity – to be agreed with ITE tutor
Details of activity: Explain what the activity was about. Share a rationale for choosing the activity. Outcome for the children: Consider the implications for children's learning and experience in science. Reflections on practice: Explore your learning as a result of completing this activity. What are your key take aways from completing this activity? What will you do differently in your future science teaching as a result?

Questions to support the completion of your Review - Stage 3

Action Plan Revisit The paragraphs from your original Action Plan will be copied into the Review section for ease. This will allow you to reflect and consider how much your learning and confidence has moved on since the beginning of the award.
How have your personal aims for taking part been met? What progress have I made towards my aims so far? What actions have been most effective in moving towards my aims? What challenges or obstacles have you faced, and how have you dealt with them? How do your aims align with your values and long-term vision? How have your strengths been progressed? What new strengths have been developed? Which of your strengths have you relied on most in recent experiences? How have they helped you succeed? How have your key strengths evolved or improved over time? What specific actions or experiences contributed to this progress? What feedback have you received from others that indicates growth in your strengths? Have you faced any challenges that tested your strengths? How did you handle them, and what did you learn from the experience? Which environments or situations have allowed your strengths to shine and progress the most? How have your target areas for development been addressed? What new areas for development have you identified? Which targets have you achieved? How much progress did you make towards each target? Explore why. What factors contributed to your success in meeting these targets? What obstacles or challenges did you face, and how did you handle them? What lessons did you learn from the targets you did and didn't meet? What new targets will you set yourself?

What are your overall reflections about the Primary Science Enhancement award?

How well did you prepare for the award process? What could you have done differently in your preparation?

Did your approach to the award align with the criteria and objectives set by PSTT?

What aspects of your participation are you most proud of, and why?

What specific strengths did you demonstrate during the award process?

Were there areas where you struggled or felt less confident? How did you address these challenges?

What did you learn about yourself through this experience?

What are your key takeaways?

Self-Assessment

How has your portfolio of reflective activities demonstrated that you have met each of the PSEA criteria?

Consider each criteria.

Read through the reflections for each of your six activities.

Closely examine the evidence you have collected for each activity and establish where there are links to the criteria.

It is likely that, for any given criteria, approximately 2 to 3 activities will be used as supporting evidence.

Clearly explain what you did, observed or learned during the activity that enabled you to fulfil the given criteria.