

# Scenario-based learning in the Early Career Teacher Entitlement programme



Education  
Endowment  
Foundation

Evaluator (institution): The Behavioural Insight Team

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|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PROJECT TITLE                      | Scenario-based learning in the Early Career Teacher Entitlement programme: A nimble trial using <b>an alternating treatment crossover design</b> .                                          |
| DEVELOPER (INSTITUTION)            | The National Institute of Teaching (NlOT) and Proxima Education                                                                                                                             |
| EVALUATOR (INSTITUTION)            | The Behavioural Insights Team (BIT)                                                                                                                                                         |
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| TRIAL DESIGN                       | Alternating treatment crossover design                                                                                                                                                      |
| NUMBER OF TEACHERS                 | 120 registered for programme before the first session; with statistical power calculated for a range of 50 (representing substantial attrition) to 150 (representing increased recruitment) |
| NUMBER OF PUPILS                   | N/A                                                                                                                                                                                         |
| PRIMARY OUTCOME MEASURE AND SOURCE | Self-efficacy in the session domain (as measured by a self-report survey)                                                                                                                   |

## Protocol version history

| VERSION | DATE     | REASON FOR REVISION |
|---------|----------|---------------------|
| 1.0     | 08/09/25 |                     |
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# 1. Study rationale and background

## Background

In 2019, The Department for Education (DfE) launched the Early Career Framework (ECF) as part of its Teacher Recruitment and Retention Strategy. The ECF is a programme designed to provide a comprehensive and structured support system for new teachers. It outlines the knowledge and skills that early career teachers are entitled to learn and develop during their first two years in the profession. ECF providers must translate these entitlements into a training and professional development curriculum for Early Career Teachers (ECTs) (DfE, 2024).

In their role supporting the roll out of the ECF and as an independent ‘evidence guardian’ ensuring the framework is underpinned by evidence, the Education Endowment Foundation (EEF) commissioned two evaluations of ECF; a pilot study exploring the promise, feasibility, and scalability of three ECF-based training programmes developed by two lead providers and an evaluation of the impact of the early-roll out of the ECF (Walker et al, 2024) . These evaluations helped identify and address issues to improve the delivery of the ECF.

As of September 2025, the programme merged the existing Initial Teacher Training (ITT) Core Content Framework and the ECF into a single programme, the ITTECF. This integrated framework aims to ensure a smoother transition from initial training into a teacher's professional career (DfE, 2024). This iteration of the programme, running from September 2025 - September 2028, also aims to give providers greater flexibility to adapt the delivery of the programme to better meet the needs of schools and ECTs.

As a result of this, many lead providers are considering making adaptations to how they deliver their programmes. Currently, these providers may not have access to evidence on whether these adaptations will affect engagement, take-up, and participant learning outcomes. To address this, the EEF has appointed the Behavioural Insights Team to run a set of nimble trials<sup>1</sup>, evaluating the impact of adaptations to the delivery of the ITTECF.<sup>2</sup> The three aims of the nimble trials are to:

1. To support ITTECF providers to strengthen their programme design, by generating evidence on the impact of a specific delivery adaptation on proximal outcomes relevant to the goals of the ITTECF
2. To generate evidence that will support policy-makers and other ITTECF providers to iterate on the design of the programme.
3. To contribute to the wider evidence base on how effective professional development can be delivered and on effective methods for evaluating such approaches.

**Scenario-based learning in the Early Career Teacher Entitlement programme: A nimble trial using an alternating treatment crossover design.**

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<sup>1</sup> Nimble trials aim to address research questions in a faster or more ‘nimble’ way than traditional randomised controlled trials by focussing on proximal outcomes which can be measured quickly and relying on routinely collected administrative data which reduces the need for extensive data collection.

<sup>2</sup> Adaptations may include changes to the delivery of training such as dosage, frequency, support provided or mode of delivery and changes to the resources provided.

As part of The National Institute of Teaching's (NlOT) delivery of the ITTECF, Early Career Teachers (ECTs) receive seven development seminars. These include an introductory session and six sessions covering key areas of development for ECTs in the ITTECF including:

1. Behaviour and high expectations
2. How pupils learn
3. Subject and curriculum
4. Classroom practice
5. Assessment
6. Adapting Teaching to meet the needs of all pupils.

All sessions follow the same broad format:

- Each session runs for 90 minutes and includes a mixture of input and discussion.
- Session facilitators provide input on an aspect of the session topic (for example, in the session 'How pupils learn', one topic is 'Sequencing lessons so that pupils secure foundational knowledge before encountering more complex content')
- After the input, ECTs are asked to discuss a topic or scripted question (e.g. How can teachers leverage an understanding of the 'three-component model of working memory' to inform their practice?).
- The session facilitator then facilitates a discussion on the topic or scripted question, before moving on to the next aspect of the session (at which point the format is repeated).
- ECTs are asked to complete an end of session survey, which asks about their experience of the session and their perceived outcomes.

This nimble trial will evaluate the impact of an adaptation to the way three of these sessions are delivered. The adaptation being tested is the use of scenario based learning activities called digital approximations of practice, which will replace the structured discussion activities in the business as usual sessions.

The approximations of practice will be tested in the following sessions:

- How pupils learn (November 2025)
- Subject and curriculum (January / February 2026)
- Classroom practice (March / April 2026)

These sessions were selected by the National Institute of Teaching for the nimble trial as they are delivered online for all ECTs.

### **Research purpose**

The purpose of this research is to test whether the use of digital approximations of practice in the delivery of the ITTECF improves **ECTs' self-efficacy in the relevant session domain**.

**Digital approximations of practice** are an activity in which ECTs are presented with subject-specific scenarios relating to the core ECF learning areas, and asked to describe how they would respond in the classroom. Responses are then shared anonymously with peers during the training session for peer review and feedback. More generally, approximations are scenario-based activities that provide opportunities for practice and formative assessment within teacher

education. There are two different types of approximations, which require participants to respond in different ways:

1. ‘Decide’ approximations require participants to read a scenario, choose between two possible courses of actions and justify this decision.
2. ‘Script’ approximations require participants to read a scenario and then script what they would say and/or do in response, without the provision of pre-written options to choose from.

Approximations of practice are designed to help teachers connect theory to classroom practice, develop their professional judgement, and improve their skills in areas such as assessment and questioning. Evidence from initial teacher training suggests that teachers find scenario-based learning engaging and that it can improve their skills (Mancenido et al, 2025).

Approximations of practice can support ECT development in three ways:

- 1. Improving ECT skill development:** Approximations of practice provide ECTs with opportunities to engage in activities that are similar to, but less complex than, teaching a whole lesson. Evidence shows that breaking down complex skills into their constituent parts and allowing for deliberate practice, can facilitate the transfer of knowledge into professional action (Bardach et al, 2021). By reducing the cognitive load, teachers can focus on developing specific skills and professional judgement (Mancenido et al, 2025). This development of specific skills and professional judgment can directly enhance ECTs’ sense of competence and confidence, thereby improving their self-efficacy in the classroom.
- 2. Increasing ECT engagement with programme content:** Feedback from NIoT’s initial teacher training programme found teachers value opportunities for practice and peer support, while wider evidence shows that teachers find scenario-based learning engaging (Klassen et al, 2021). This increased engagement and positive experience with the training content can improve ECTs’ belief in their ability to apply what they’ve learned, which can strengthen their overall teaching self-efficacy.
- 3. Providing subject-specific content:** Subject-specific content was identified as a key priority for second generation ITTECF programmes (DfE, 2024). Supporting this, a study exploring ways to optimise the ITTECF identified a need to improve the subject-specific support available to ECTs (Twiselton et al, 2024). Access to specific, relevant support can increase ECT confidence in their subject matter expertise, which in turn contributes to a stronger belief in ability to teach effectively (George et al, 2018).

Due to the constraints (resource and logistical) of the nimble trial, we are unable to directly measure the impact of the approximations of practice on ECT skill development or engagement with programme content. Following detailed discussion with both EEF and NIoT (our session delivery partner), have therefore decided to use ‘self-efficacy in the session domain’ as the best available single proxy for measuring the potential impact of the approximations of practice on ECT development through three separate channels. Further detail is provided later in this section and in Section 3.

A crossover design is an experimental design in which all participants receive a sequence of different treatments (e.g. the intervention and business-as-usual) in different time periods, with

each participant serving as their own control. The impact evaluation uses an **alternating treatment crossover design**, with the sample of ECT participants split into two equal-size groups that receive the “intervention” (the adaptation) in an alternating sequence over time (i.e. one group is ABA, the other group is BAB, where **“A” is exposure to the adaptation and “B” is business-as-usual**). This “alternating” (e.g. ABA vs BAB) randomisation provides the most effective combination of implementation feasibility and statistical power for a given sample of participants of any available randomisation design. Alternative designs include:

- The classic “*static*” randomisation (AAA vs BBB, , i.e. one fixed “treatment” group and one fixed “control” group for the duration of the evaluation). This is logistically easier to implement but provides far less statistical power for a given sample size.
- “*Repeated*” randomisation (ECTs assigned at random to *any* possible sequence of treatments (i.e. the available sequences being AAA, AAB, ABA, ABB, BAA, BAB, BBA, and BBB), which provides less statistical power for a given sample size and is much more challenging to implement (i.e. from the perspective of the session delivery partner).
- “*Fair*” randomisation (random sequence of treatments at the level of each ECT such that each ECT experiences the adaptation either one or two times (i.e. the available sequences being AAB, ABA, ABB, BAA, BAB, and BBA)), which provides a similar level of statistical power for a given sample size, but is much more challenging to implement (i.e. from the perspective of the session delivery partner).

A key principle of this design is that while each cohort attends the same three domain-specific training sessions in the same order, one cohort is exposed to the adaptation (the ‘approximation of practice’) during the session, while the other cohort is not exposed to the adaptation in the equivalent session.<sup>3</sup> In this sense, comparison takes place both within-cohort (across the three sessions) and between-cohort (for each session). The design assumes that the adaptation is effectively the same in each session, even though the topic of the session (the session ‘domain’) is different. In this sense, it is different from a ‘pure’ crossover design where the content *and* adaptation would be both exactly the same each time an individual receives treatment ‘A’. This type of ‘pure’ design is not feasible in this case as session content has to change over time in line with the course.

Each cohort will have a single facilitator for the duration of the evaluation (i.e. two cohorts, two facilitators). While this approach may appear to confound facilitator and cohort effects, we contend that it remains the ‘least worst’ (most robust and practical) option in this specific alternating crossover design, for the following reasons:

- **Avoids confounding with carryover effects:** The core purpose of the alternating crossover design is to compare the effects of the adaptation (A) and the “business-as-usual” conditions (B) within each cohort. The primary concern is not to compare the two cohorts themselves, but to assess the differential impact of A versus B across both sequences. We argue that having one facilitator per cohort creates a consistent delivery

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<sup>3</sup> While the overall ECF training programme that ECTs are attending consists of six sessions, this evaluation only covers three of them (Sessions 2, 3, and 5). This is for logistical reasons, with three being the maximum number of sessions that the session delivery partners (NIoT and Proxima) can deliver online. Online delivery is a key requirement of the evaluation, as the sample of participating ECTs is spread across the UK (making stratification by region impractical for in-person delivery). The remaining three sessions (each of which are “business-as-usual” sessions, i.e. with no approximations of practice) will be delivered in-person, and do not contribute to the evaluation in any way (i.e. no outcome or other survey data will be collected at these sessions).

environment for each group. Any observed differences are then attributed to the treatment sequence (ABA vs. BAB) within that specific environment. We are confident in the avoidance of carryover effects within each cohort using this approach, as the three sessions that make up the evaluation (i.e. the second, third, and fifth session of the overall six-session programme) are spaced sufficiently apart to avoid this.<sup>4</sup> Furthermore, each session and scenario-based treatment activity is domain-specific, and implementation of the intervention (adaptation) is performed by the session facilitator according to the prescribed sequence (i.e. the scenario exercises are both domain-specific and only used during a 'treatment' session).

- **Maintains internal validity:** Once the initial randomisation is performed, keeping the facilitators constant within their assigned cohort preserves the internal validity of that cohort's experience. It prevents a new source of variability (different facilitators at different time points) from entering the data, which could complicate our analysis of the crossover effect.
- **Alternative #1 (facilitators only delivering the 'A' or 'B' sessions):** One alternative is for the facilitators to assign themselves to the adaptation or business-as-usual conditions, regardless of cohort. However this would lead to a consequence even less desirable than confounding facilitator and cohort effects, namely the confounding of facilitator and treatment effects.
- **Alternative #2 (facilitators delivering the same session, regardless of cohort):** Another alternative is for facilitators to divide the six sessions in such a way that one facilitator takes both of the "session 1" sessions, the other takes both of the "session 2" sessions, etc. This introduces a *learning effect* for the facilitator, whereby the facilitator's performance might improve from the first delivery to the second, which would directly confound the results. For instance, if Cohort 1 always receives the facilitator's "first run" of a session and Cohort 2 receives the "second run," any observed difference could be due to facilitator skill development, not the treatment itself. This is a difficult and complex variable to control for in the analysis.
- **Alternative #3 (random assignment of facilitators to sessions):** we contend that this approach would introduce significant noise into the data. Each session would essentially become a separate variable influenced by a different facilitator, which makes it more challenging to isolate the true effect of the intervention (adaptation). We believe that this approach would require a much larger sample size of sessions (than six) to properly account for the random variability introduced by the facilitator changes, making the evaluation logistically more complex and less efficient.

The implementation and process evaluation (IPE) consists of 6 ECT interviews, two facilitator interviews, and use of existing monitoring data.

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<sup>4</sup> As of October 2025, it is planned that session 2 will take place in November 2025, session 3 in late January or early February 2026, and session 5 in late April or early May 2026.

## 2. Intervention and implementation

Table 1 below contains a description of the intention, digital approximations of practice using the TIDieR framework. Example approximations of practice can be found in Appendix B and C.

**Table 1. Intervention description**

| INTERVENTION NAME        | Digital Approximations of Practice                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WHY (THEORY / RATIONALE) | <p><b>The need</b></p> <p>Early career teachers (ECTs) can struggle to apply theoretical knowledge to the dynamic environment of the classroom. Research suggests that when novice teachers are asked to practice a complex skill in its entirety, their working memory can become overloaded, making it difficult to focus on specific elements for improvement (Reich, 2022). This can make it harder for ECTs to develop effective teaching practices (Ibid).</p> <p><b>The goal</b></p> <p>The intervention aims to:</p> <ol style="list-style-type: none"> <li>1. Improve ECT skill development, particularly applying theory to classroom practice.<sup>5</sup></li> <li>2. Increase ECT engagement with ECF programme content</li> </ol> <p><b>The theory</b></p> <p>One way to address the challenge is using subject-specific, scenario-based practice activities - ‘approximations of practice’. ECTs are given a subject-specific scenario related to a key skill (e.g. behaviour) and asked to respond. Responses are then shared anonymously with others in their cohort for discussion and feedback.</p> <p>Approximations of practice are designed to help teachers connect theory to classroom practice, develop their professional judgement, and improve their skills in areas such as assessment and questioning. Evidence from initial teacher training suggests that teachers find this scenario-based learning engaging and that it can improve their skills (Mancenido et al, 2025).</p> |

<sup>5</sup>After scoping feasible outcome measures, it was decided that it would not be feasible to directly measure ECT skill development, within the constraints of the nimble trial. It was subsequently decided that domain specific self-efficacy would be a suitable primary outcome measure as: 1) it is feasible to measure within the constraints of the nimble and trial; and 2) there is evidence across a range of domains for a positive relationship between self-efficacy and performance (Stajkovic and Luthans, 1998). That is, it is reasonable to expect that teachers with high levels of belief in their own ability are also likely to be skilled practitioners who deliver positive outcomes for their pupils (Klassen and Tze, 2014). It is reasonable to expect that the mechanisms by which approximations of practice can support ECT development (improving skill development, increasing engagement with programme content, and providing subject-specific content) can also increase ECTs self-efficacy.

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|                     | <p>Approximations of practice can support ECT development in three ways which, in turn, can increase ECT's self-efficacy.</p> <ol style="list-style-type: none"> <li><b>1. Improving ECT skill development:</b> Approximations of practice provide ECTs with opportunities to engage in activities that are similar to, but less complex than, teaching a whole lesson. Evidence shows that breaking down complex skills into their constituent parts and allowing for deliberate practice, can facilitate the transfer of knowledge into professional action (Bardach et al, 2021). By reducing the cognitive load, teachers can focus on developing specific skills and professional judgement (Mancenido et al, 2025). This development of specific skills and professional judgment can directly enhance ECTs' sense of competence and confidence, thereby improving their self-efficacy in the classroom.</li> <li><b>2. Increasing ECT engagement with programme content:</b> Feedback from NIoT's initial teacher training programme found teachers value opportunities for practice and peer support, while wider evidence shows that teachers find scenario-based learning engaging (Klassen et al, 2021). This increased engagement and positive experience with the training content can lead ECTs to hold to a greater belief in their ability to apply what they've learned, which can strengthen their overall teaching self-efficacy.</li> <li><b>3. Providing subject-specific content:</b> Subject-specific content was identified as a key priority for second generation ECF programmes (DfE, 2024). Surveys suggest some early career teachers want more subject-specific support (Twiselton et al, 2024). Access to specific, relevant support can increase ECT confidence in their subject matter expertise, which in turn contributes to a stronger belief in ability to teach effectively (George et al, 2018).</li> </ol> |
| WHO<br>(RECIPIENTS) | <p>The intervention will be delivered to ECTs teaching Science in secondary schools who are participating in the NIoT's Early Career Teacher Programme.</p> <p>These ECTs will be teaching 11-15 year old pupils in Key Stages 3 and 4.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| WHAT<br>(MATERIALS) | <p>The intervention uses Proxima - a platform which provides digital approximations of practice (scenario-based practice activities delivered digitally).</p> <p>For each unit of study (e.g., Assessment, Questioning, Behaviour), the platform provides:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

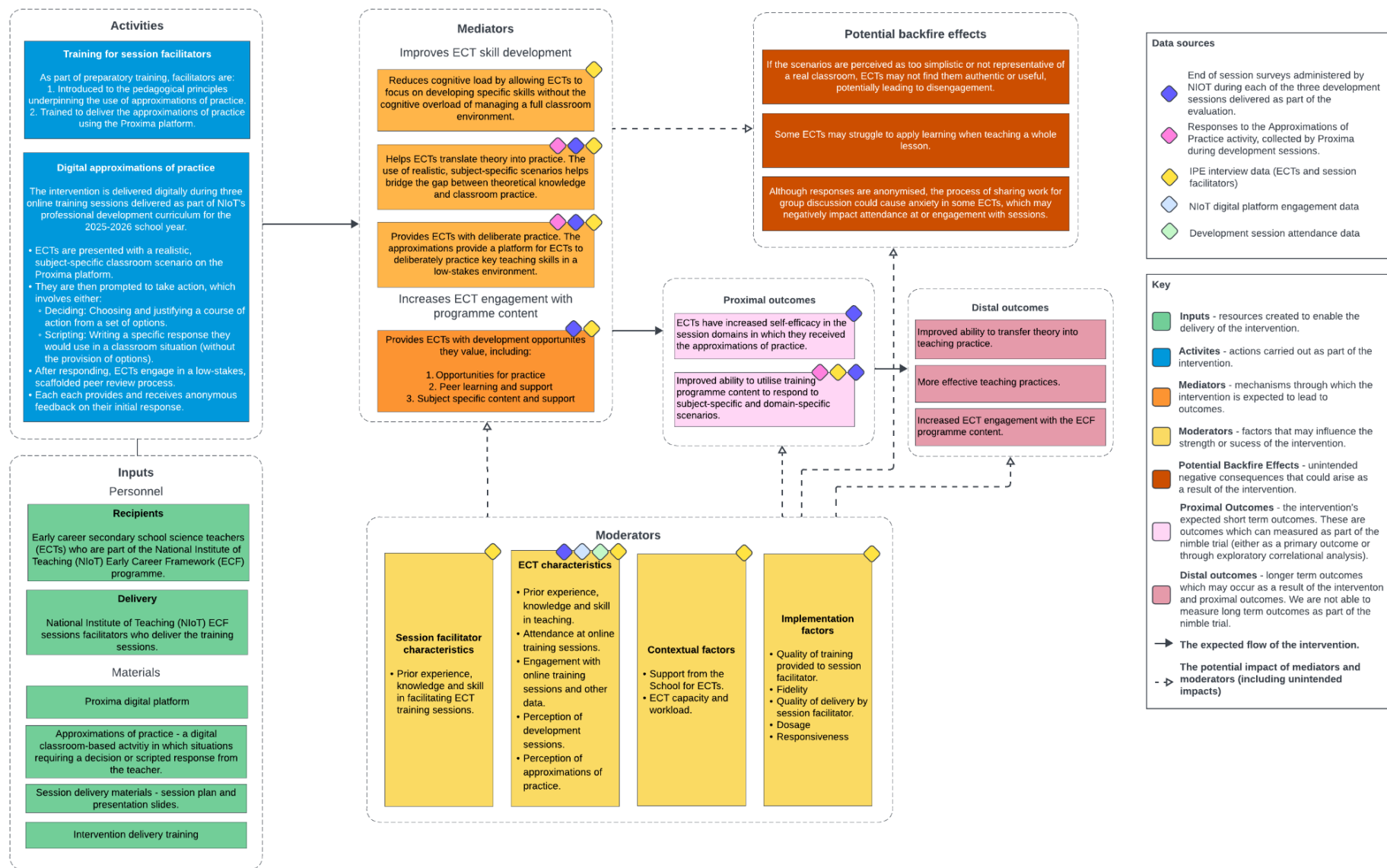
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|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                              | <ol style="list-style-type: none"> <li>1. <b>A scenario bank:</b> A collection of classroom-based scenarios that require the ECT to make a decision or script a response.</li> <li>2. <b>Supporting resources:</b> These include concept maps, presentation slides, and key research references to link theory to the practical scenarios.</li> </ol> <p>The materials are designed to provide a subject-specific opportunity for practice and formative assessment related to an idea or skill within the ITTECF, and be consistent with the wider assessment module. For example, a scenario might require ECTs to script a hinge question to identify a common misconception related to calculating wavelength (Learn how to... 6a), or to rehearse asking a question about forces while considering wait time (Learn how to...4n).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p>WHAT<br/>(PROCEDURES)</p> | <p>The intervention involves ECTs engaging with the digital approximations of practice in 90-minute professional development sessions (delivered by Proxima and NIoT), which typically follows a sequence:</p> <ol style="list-style-type: none"> <li>1. <b>Session input:</b> Session leads (from Proxima or NIoT) provide input on the ECF development area of focus for the session (e.g. Behaviour management).</li> <li>2. <b>Presentation of a scenario:</b> ECTs are then presented with a realistic, subject-specific classroom scenario relating to the session area of focus.</li> <li>3. <b>Task:</b> ECTs are prompted to take an action. This could be: <ol style="list-style-type: none"> <li>a. <b>A ‘Decide’ approximation:</b> Choosing and justifying a course of action from a set of options (e.g., deciding what to prioritise at the start of a lesson).</li> <li>b. <b>A ‘Script’ approximation:</b> Writing a specific response they would use in the classroom (e.g., writing a question to assess the class's understanding of a concept).</li> </ol> </li> <li>4. <b>Reflection and peer feedback:</b> After responding, ECTs are asked to review, mark and provide feedback to the response of a peer (both the response and the feedback are provided anonymously). The peer review activity is scaffolded with instructions and prompts . ECTs are asked to: <ol style="list-style-type: none"> <li>a. Identify the inclusion of techniques covered in the session input</li> <li>b. Provide feedback on the strengths of the response</li> <li>c. Share suggestions for improvement</li> </ol> </li> </ol> |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | <p>ECTs are prompted to ‘remember to be kind’ while responding.</p> <p>ECTs then discuss the choices made in the anonymous examples with peers and the session lead, helping them to reflect on their practice.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| WHO (PROVIDER)           | <p>The intervention is delivered as part of the National Institute of Teaching (NlOT)’s Early Career Teacher programme. The digital materials and platform are provided by Proxima Education.</p> <p>During implementation, the intervention will be delivered in online sessions by facilitators called session leaders. The session leaders are either from Proxima or NlOT.</p>                                                                                                                                                                                                                                                                                                                                         |
| HOW (DELIVERY MODE)      | <p>The approximations of practice will be delivered digitally during three 90-minute online training sessions delivered to ECTs in the 2025-2026 school year. The training sessions are delivered as part of NlOT’s professional development curriculum for ECTs, with each session focussing on a different unit of study (e.g. Assessment or Behaviour Management). ECTs will receive the intervention in either one or two of the three sessions (see When and How Much below).</p> <p>The intervention is delivered by a session leader, who facilitates the online training sessions. Online sessions are expected to be delivered to between 50-100 ECTs.</p>                                                        |
| WHERE (LOCATION)         | <p>The intervention is delivered in online training sessions to support the evaluation of the intervention.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| WHEN & HOW MUCH (DOSAGE) | <p>The digital approximations of practice are used as specific activities integrated into NlOT’s professional development curriculum for ECTs rather than as a standalone, time-delineated intervention.</p> <p>The evaluation uses an alternating treatment crossover design, meaning ECTs will alternate between being exposed to the intervention (i.e. digital approximations of practice) and the ‘business-as-usual’ conditions in each session. ECTs will receive the intervention in either one or two out of the three sessions, depending on whether they are assigned to the first sequence (ABA) or second sequence (BAB) during randomisation (where “A” is the adaptation and “B” is business-as-usual).</p> |
| TAILORING (ADAPTATION)   | <p>The intervention is tailored for the intended participants in two key ways:</p> <ol style="list-style-type: none"> <li>1. Subject-Specific Content: The scenarios are designed to be specific to the subject being taught (Science).</li> <li>2. Curriculum Integration: The approximations are aligned with the specific modules of the NlOT’s ECF curriculum (e.g., using assessment-focused scenarios during the assessment module).</li> </ol>                                                                                                                                                                                                                                                                      |

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | <p>To adapt the approximations to ECTs' understanding of the session content, facilitators can:</p> <ol style="list-style-type: none"> <li>1. Extend the amount of time ECTs have to respond.</li> <li>2. Provide additional prompts or support in response to any misconceptions that are revealed.</li> <li>3. Select approximations with more or less scaffolding, based on ECTs' responses to earlier tasks.<sup>6</sup></li> </ol> <p>Scenarios can be delivered via screen readers and speech-to-text technology for ECTs with additional needs.</p> |
| MANAGING QUALITY | <p>The following strategies have been put in place to support effective implementation:</p> <ol style="list-style-type: none"> <li>1. Sessions leads given online training in use of Proxima's digital approximations of practice tool. This includes dry run sessions to practice using the tool.</li> <li>2. Proxima is available to provide technical support to session leads.</li> </ol>                                                                                                                                                              |

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<sup>6</sup> Within this project, the same scenarios will be used by all ECTs and the same points in the session, but the level of scaffolding can be varied based on the need of the ECTs.



The Theory of Change relies on the following key assumptions and mechanisms:

### **Assumptions**

**1. Session facilitators receive training and prepare to deliver the intervention.**

Facilitators are expected to receive training from Proxima on how to use the Proxima platform to deliver the Approximations of Practice activity and understand how to deliver the activity effectively.

**2. Facilitators deliver the activity correctly as per the outcome of the randomisation.**

The intervention is delivered to ECTs in the correct session(s) as per the randomisation outcome.

**3. ECTs receiving the intervention engage with and complete the Approximations of Practice activity.**

ECTs engage with the scenarios presented, attempt to apply the learning from the session input to respond to the scenario and attempt to provide meaningful feedback to peers on their responses to the scenarios.

### **Mechanisms**

**1. The activity improves ECT skill development.**

The use of realistic, subject-specific scenarios:

- a. Helps bridge the gap between theoretical knowledge and classroom practice.
- b. Provides an opportunity for ECTs to deliberately practice key teaching skills in a low-stakes environment.

**2. The activity increases ECT engagement with programme content.**

Provides ECTs with development opportunities they value including:

- i. Opportunities for practice
- ii. Peer learning and support
- iii. Subject specific content and support.

This study utilises an **alternating treatment crossover design**, in which each participant serves as their own control. The training sessions are delivered as part of NIoT's professional development curriculum for ECTs, with each session focussing on a different unit of study (e.g. Assessment or Behaviour Management). ECTs will receive the intervention in either one or two of the three sessions. The control condition for any given time period is the business-as-usual setting (i.e. without the adaptation). The alternating treatment crossover design with ABA and BAB sequences (where "A" is the adaptation and "B" is business-as-usual) allows for both a within-participant and a between-cohort comparison. As detailed in 'study design' in Section 1 above, the primary benefit of the alternating treatment (crossover) design is increased statistical

power through intra-individual comparisons (each ECT serves as their own control) with a smaller sample than would be the case otherwise (i.e. without this design a larger sample size would be required to achieve the same statistical power). This design also helps to control for individual differences.

It is important to note that a crossover design such as this one is only appropriate for stable conditions (where the outcome of interest is not expected to significantly vary on its own over the course of the evaluation) and interventions with short, reversible effects, requiring careful consideration of treatment 'washout' and carryover effects.<sup>7</sup> 'Treatment washout' refers to the period between two treatment phases during which no intervention is given (in other words, the effect of the first treatment period must have 'disappeared' completely before the beginning of subsequent control (and treatment) periods). We are confident in any risk of carryover effects being minimised, due to the domain-specific nature of each implementation of the intervention (i.e. each approximation is focused on the specific content being presented within a given treatment session rather than on more general concepts that might apply to multiple sessions), and the period of time (2-3 months) between each session. The trial design relies on computing the within-subject difference in outcome between the study periods. Because we have two groups who respectively experience a given session with and without the intervention in counterbalanced order, we avoid the interpretive problems that arise with a simple pre-intervention vs post-intervention comparison. It is worth noting however that this design relies upon the assumption that the treatment (i.e. approximations of practice) has similar effects on outcomes of interest (e.g. ECT self-efficacy in the session domain) across different training domains (with each session relating to a different domain). Due to the nature of the intervention itself, we have no *a priori* reason to believe that the impact of the approximations on our outcomes of interest would vary significantly between different domains. However it should be noted that we have no means of empirically verifying this *ex ante*, which is a limitation of this study design.

The intervention will be delivered in ECF career development sessions delivered to ECTs between November and late April / early May in the 2025/2026 school year.

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<sup>7</sup> See for instance [Ebbutt \(1984\)](#), [Wiley et al. \(2016\)](#), [Nyakundi et al \(2021\)](#), and [Bilek et al. \(2023\)](#).

### 3. Impact evaluation

#### 3.1 Research questions

**Primary research question:** What is the effect of the approximations of practice on ECTs' domain-specific self-efficacy?<sup>8</sup>

#### 3.2 Design, participants and outcome measures

**Table 2: Trial design and outcomes**

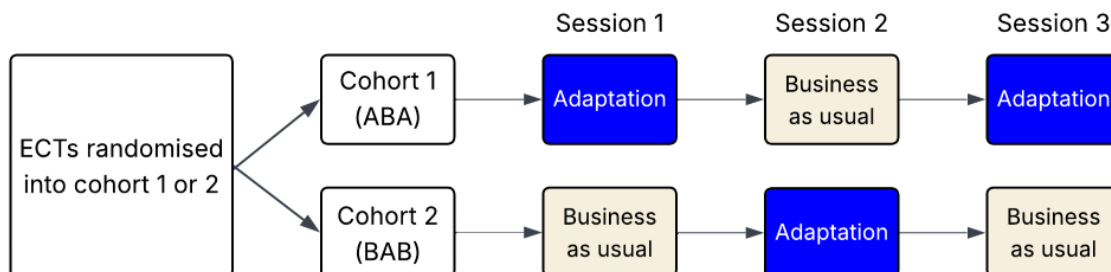
|                                             |                                        |                                                                                                                                                 |
|---------------------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Trial design, including number of arms      |                                        | Alternating treatment crossover design (2 arms)                                                                                                 |
| Participants                                | inclusion criteria                     | Science ECTs attending NIoT's training programmes for ECTs on the Early Career Framework (ECF)                                                  |
|                                             | exclusion criteria                     | None                                                                                                                                            |
|                                             | target number                          | 300 - 400 registered for programme; 168 - 324 attending sessions and providing outcome data (estimated ranges at time of drafting) <sup>9</sup> |
| Unit of randomisation                       |                                        | ECT (teacher)                                                                                                                                   |
| Stratification variables<br>(if applicable) |                                        | N/A                                                                                                                                             |
| Primary outcome                             | variable                               | Self-efficacy in the session domain                                                                                                             |
|                                             | measure<br>(instrument, scale, source) | Adapted Teachers' Sense of Efficacy Scale (TSES); 9-point Likert scale [1,9]; measured by a self-report survey                                  |
|                                             | Proposed question                      | <i>"How well can you apply the concepts from this training session in your own classroom?"</i>                                                  |
|                                             | Proposed scale                         | 9-point Likert scale                                                                                                                            |
|                                             | direct measure or proxy?               | Direct measure                                                                                                                                  |

<sup>8</sup> "Domain-specific self-efficacy" refers to ECT confidence in applying training content from a specific training sessions (with each of the three sessions an ECT is invited to attend covering a different "domain" of teaching, as detailed in Section 1 above). We operationalise this via the instrument question *"How well can you apply the concepts from this training session in your own classroom?"*.

<sup>9</sup> The assumed number of ECTs recruited to the programme is 300 - 400, with NIoT estimating based on experience that approximately 80% of ECTs attend the online sessions, and that approximately 70% complete the related evaluations for the primary outcome. This would imply a minimum post-attrition sample of 168 ECTs ( $300 * 0.8 * 0.7$ ), and a 'best case' maximum post-attrition sample of 324 ( $400 * 0.9 * 0.9$ ; assuming 90% attendance and 90% data completion)

|  |                    |                                                                                        |
|--|--------------------|----------------------------------------------------------------------------------------|
|  | time of collection | At the end of each session, administered by the Proxima/NIoT staff leading the session |
|--|--------------------|----------------------------------------------------------------------------------------|

Figure 1. Visual representation of trial design



We propose the choice of self-efficacy as the primary outcome as there is evidence across a range of fields for a positive relationship between self-efficacy and performance (Stajkovic and Luthans, 1998). That is, it is plausible that teachers with high levels of belief in their own ability are also likely to deliver positive outcomes for students (Klassen and Tze, 2014). We also considered proposing ‘*ECT understanding of how to apply training content*’ as a potential primary outcome, however given that this is part of the peer-assessed scenario exercises that are a key part the intervention (approximations of practice) itself, it was deemed unsuitable for inclusion as an outcome measure in this Nimble Trial. In early preparatory meetings between all parties (EEF, NIoT, Proxima, and BIT), the following other potential outcome measures were ruled out: teacher quality (mentor observed); pupil attainment; teacher knowledge (assessed by a test or quiz). We therefore propose ECT self-efficacy as the primary outcome.

The specific measure we propose is a single-item, domain-*neutral* adaptation of the widely-used and psychometrically robust [Teachers' Sense of Efficacy Scale \(TSES\)](#). Developed by Tschannen-Moran and Woolfolk Hoy in 2001, the TSES measures teachers’ beliefs in their ability to influence student engagement, instructional strategies, and classroom management.<sup>10</sup> The TSES was developed to capture nuance by assessing teacher self-efficacy across specific teaching domains, and is widely used in educational research to assess teachers’ beliefs in their efficacy. The scale has both long-form (24 question) and short-form (12 question) versions, each of which are made up of three subscales (student engagement; instructional strategies; classroom management). Each question is based on one of three question stems, one of which (“*How well can you*”) we propose using as part of a single-item measure of ECT self-efficacy as it relates to the ECF training (“*How well can you apply the concepts from this training session in your own classroom?*”).<sup>11</sup> In doing so, we consciously frame the question as partly domain-*neutral* rather than domain-*specific*. To ensure it can be used in the post-session survey for each of the three sessions included in the evaluation, the question does not specifically relate to the content

<sup>10</sup> Full publication: [Tschannen-Moran and Woolfolk Hoy \(2001\)](#).

<sup>11</sup> This question wording, and the proposed primary outcome (self-efficacy in the session domain) more generally, were agreed after extensive discussion with both EEF and the delivery partner NIoT, with careful consideration of this and other options.

covered in any of the three sessions; or to a specific teaching subscale (such as student engagement, instructional strategies, or classroom management).

This level of domain specificity is frequently used for self-efficacy measures in education research,<sup>12</sup> and other EEF evaluations have utilised measures of self-efficacy that are at a similar level of domain specificity.<sup>13</sup> We are therefore confident that this outcome measure - carefully considered in discussion with both EEF and our delivery partner NIoT - is appropriate for measurement of self-efficacy more broadly across the different domains covered in the sessions, given it relates at all times to confidence in teaching.

We retain the TSES' original 9-point Likert scale for answer options.<sup>14,15,16</sup> This is a strategic decision made to directly address the ceiling effect identified in the trial's initial power calculations, which predicted a high baseline mean on a more truncated scale.<sup>17</sup> A 9-point scale provides a greater degree of measurement precision and "headroom" to capture subtle but meaningful increases in self-efficacy, thereby supporting better statistical power and validity of our findings. The outcome measure will be scored 1-9 at a given time period (i.e. no summation or computing of means across time periods). The most appropriate data for modelling mean and standard deviation comes from the summary data for the short-form TSES, which was found to have a mean of 7.1 and standard deviation of 0.98, implying less vulnerability to ceiling effects than other measures (given there are almost two standard deviations of "distance" between the mean and maximum values), whilst not being impervious to this potential threat.

While this approach comes with a risk of lower fidelity and higher measurement error (relative to the 12- or 24-question version of the verified TSES scale), our decision to measure ECT self-efficacy within this Nimble Trial using only one question (rather than 12 or 24) is based primarily on two factors:

- The fact that even within the short-form (12 question) version of the TSES, there would be questions that do not relate to the domain-specific ECF training session ECTs have just completed (because even the short-form version of the TSES contains questions that are specific to all three TSES subscales, which may be analogous to the ECF training domains). A single domain-neutral question ("*How well can you apply the concepts from this training session in your own classroom?*") avoids this complication.
- The likelihood that ECTs, at the end of a long training session, provide complete, attentive, and faithful answers to 12 (or 24) questions being much lower than the

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<sup>12</sup> See for instance Zimmerman (2000), Chan (2008), Alkharusi et al. (2017), Liu et al. (2022), and van Zyl et al. (2022).

<sup>13</sup> For instance, EEF's Peer-to-Peer Coaching evaluation (2025) utilises as its secondary outcome a measure of general "maths self-efficacy", rather than measures that are even more domain-specific such as 'mathematical proof self-efficacy' (e.g. Övez & Özdemir (2014)) or 'geometry self-efficacy' (e.g. Cantürk-Günhan & Başer (2007)).

<sup>14</sup> See Appendix A: the original overall question prompt for self-assessed scoring on the TSES scale is "*How much can you do?*", which is used to score the response to several questions (either 12 in the short-form or 24 in the long-form versions), which are domain-specific (i.e. each question is different).

<sup>15</sup> TSES scale: [Tschannen-Moran and Wolfolk Hoy \(2001\)](#).

<sup>16</sup> Original scale (see Appendix A for the original short-form TSES scale, only five of the nine numeric number options have a written descriptor): 1 = Nothing; 3 = Very Little; 5 = Some influence; 7 = Quite a Bit; 9 = A Great Deal. Modified scale: 1 = Can't at all; 3 = Very Little; 5 = To a moderate extent; 7 = Quite a Bit; 9 = A Great Deal.

<sup>17</sup> These initial power calculations used a self-reported confidence outcome which used a 0-4 Likert scale with data producing a mean of 3.5 and a standard deviation of 0.61, all provided by NIoT. Given the mean of 3.5, the implied high proportion of maximum (4) scores on the (0-4 point) scale means that ceiling effects (the inability to detect any realised change when using the scale) are a key risk of usage.

likelihood they do so for one question (colleagues from NIoT offered anecdotal reflections on this being the case).

Data for the primary outcome (ECT self-efficacy) will be captured via a survey administered by session facilitators at the end of each session, in which the proposed question (“*How well can you apply the concepts from this training session in your own classroom?*”) will be asked. Given the online nature of the three sessions, the survey will be online, with a link sent to each session attendee.

Due to the existing nature of survey data collection performed by NIoT as part of the broader ECF Programme, the collection of covariate data (such as data on demographics) will be limited to the following: whether the ECT is in their first or second year of the ECF Programme; and phase of teaching (EYFS, Primary, Secondary, KS5). As per the principle of data minimisation, only data necessary for administration and quality control of the training sessions is collected by NIoT, with the collection of any personal data minimised. It is important to note however that our fixed effects model (detailed below in section 4) implicitly controls for all time-invariant, individual-level characteristics (e.g., gender, age, teaching experience, school FSM %), as ECTs act as their own control due to the nature of the study design.

### 3.3 Randomisation

BIT will conduct the randomisation of ECTs into the two cohorts at the beginning of the trial.

Once the list of trial participants is finalised, NIoT will share pseudo-anonymised ECT IDs with BIT for all ECTs participating in the study. BIT will conduct the randomisation using pseudo-anonymised ECT IDs and share the outcome with NIoT.

BIT will use statistical software (e.g. R or Stata) to conduct the random allocation. The randomisation code will be independently quality assured by another researcher at BIT.

BIT will perform **simple randomisation** of ECTs into cohorts, using the following steps:

- Load ECT data into R or Stata
- Set a new random seed
- Assign each ECT a random number drawn from a uniform distribution (0–1)
- Sort ECTs by random number (ascending)
- Assign the first half of the sorted list into the **first cohort** (i.e. ABA), and the second half of the sorted list into the **second cohort** (i.e. BAB), where “A” is the adaptation and “B” is business-as-usual
- If the total number of ECTs is odd, assign the final ECT based on a second random number (first cohort if <0.5, second cohort otherwise)

All randomisation-related data, code, and documentation will be archived by BIT. The primary analyst will not be blinded to cohort allocation.

### 3.4 Sample size calculations

We conducted power calculations to estimate a range of **minimum detectable effect sizes (MDES)** given a range of potential sample sizes (with the realised sample size still to be determined at the time of writing), and an assumed mean and standard deviation for a primary outcome measure with a 1-9 Likert scale, as presented in **Table 3a below**. Note that the assumed mean of 7.1 and standard deviation of 0.98 are taken from the figures for the short-form (12-item) TSES in [Tschannen-Moran and Wolfolk Hoy \(2001\)](#). The range of ECTs for which power is calculated is 50-150, based on a recruited sample of 119 as of 13/10/25, with 50 representing an endline completion rate of just 42%, and 150 representing significant additional recruitment of ECTs before the three sessions begin.

Table 3b below presents the MDES using (unstandardised) “raw mean difference”, (standardised) “*Cohen’s d*”, and (standardised) “as a percentage of the gap between mean and maximum scores”. We include this third expression of the MDES as neither the raw mean difference nor Cohen’s *d* give a full picture of how achievable the effect size is in practical terms. We therefore also present the MDES in terms of the proportion of remaining potential for improvement within the scale (i.e. a better indication of the extent to which average outcomes can feasibly be shifted).

**Table 3a: Preliminary data and assumptions for MDES calculation**

|                                                                          |  | OVERALL                                                        |
|--------------------------------------------------------------------------|--|----------------------------------------------------------------|
| Alpha                                                                    |  | 0.05                                                           |
| Power                                                                    |  | 0.8                                                            |
| Scale of primary outcome measure                                         |  | 1-9 Likert scale                                               |
| Mean and SD of primary outcome measure                                   |  | Mean = 7.1, sd = 0.98                                          |
| Assumed sample size (post attrition in both attendance and outcome data) |  | A range of seven sample sizes: [50, 60, 75, 90, 100, 120, 150] |
| Software used for calculations                                           |  | R 4.4.1                                                        |

**Table 3b: MDES estimates**

| No. of ECTs<br>(endline, post attrition) | MDES (raw mean difference) | MDES ( <i>Cohen’s d</i> ) | MDES (as a percentage of the gap between mean and maximum scores) |
|------------------------------------------|----------------------------|---------------------------|-------------------------------------------------------------------|
| (n = 50)                                 | 0.380                      | 0.388                     | 20.0%                                                             |
| (n = 60)                                 | 0.341                      | 0.348                     | 17.9%                                                             |

|           |       |       |       |
|-----------|-------|-------|-------|
| (n = 75)  | 0.307 | 0.313 | 16.2% |
| (n = 90)  | 0.280 | 0.286 | 14.7% |
| (n = 100) | 0.267 | 0.272 | 14.1% |
| (n = 120) | 0.243 | 0.248 | 12.8% |
| (n = 150) | 0.215 | 219   | 11.3% |

## 4. Impact analysis

|                      |                                                                                                                                                                                                                                                                        |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Research Question    | Primary (RQ1)                                                                                                                                                                                                                                                          |
| Sample               | Full (all ECTs)                                                                                                                                                                                                                                                        |
| Dependent variable   | Self-efficacy in the session domain (as measured by a self-report survey at the end of each session)                                                                                                                                                                   |
| Independent variable | Cohort assignment                                                                                                                                                                                                                                                      |
| Control variable     | The fixed effects model implicitly controls for all time-invariant, individual-level characteristics (e.g., gender, age, teaching experience, school FSM %)                                                                                                            |
| Analytic method      | Linear fixed effects model with cluster-robust standard errors                                                                                                                                                                                                         |
| Interpretation       | <p>The adaptation affects self-efficacy by X points on the 9-point adapted TSES scale (presented with 95% confidence intervals)</p> <p><i>(We will re-express as a percentage of ECTs moving up 1 point on the scale; presented with 95% confidence intervals)</i></p> |

- The analysis will be on an Intention to Treat (ITT) basis, meaning the outcome will be analysed on the basis of the cohorts that ECTs were randomly allocated to.
- The analysis will control for session attendance by use of session-specific dummy variables, given sessions are domain-specific (i.e. one session cannot be simply swapped for another, as session content may vary significantly).
- We propose using a linear fixed effects model with cluster-robust standard errors for the analysis (where observations are effectively clustered at the level of the participant). This approach is well-suited to repeated-measures data, such as that produced by a crossover design, where each participant provides multiple observations over time. By using this method, we can appropriately account for the non-independence of measurements from the same individual, which is a key feature of this study design.

### 4.1 Primary outcome analysis

We evaluate the effect of the intervention on ECT self-efficacy in the session domain by using the below linear model:

$$Y_{ij} = \beta_0 + \beta_1 \text{Treatment}_{ij} + \beta_2 \text{Period}_j + \alpha_i + \varepsilon_{ij}$$

- $Y_{ij}$  is the outcome of interest for a given ECT (i) at a given session (j).
- $Treatment_{ij}$  is a dummy variable indicating whether an ECT is assigned to a treatment condition (i.e. receiving the adaptation) during a given session (i.e. whether in “A” or “B” for that session).
- $Period_j$  is a vector of time period effects for each of the three time periods/sessions.
- $\alpha_i$  is the **individual-specific fixed effect**. This term captures all unobserved, time-invariant characteristics of individual i.
- $\varepsilon_{ij}$  is the error term for each observation.

We plan to run the analysis using the sample of randomised ECTs who provide primary outcome data for all three sessions only. As a robustness check, we plan to re-run the primary outcome analysis with the full sample of ECTs who provided primary outcome data for at least one of the three sessions.

#### 4.2 Exploratory analysis

Exploratory analysis will replicate the primary outcome analysis, but with two separate model extensions:

- The addition of  $\beta_3 Cohort_i$ , a dummy variable capturing any cohort effects, taking the value 1 if the individual is in Cohort 1, and the value of 0 otherwise. This will indicate whether - despite the domain-specific nature of the intervention - there may be any sequence (i.e. starting with an adaptation rather than ‘business-as-usual’) or cumulative (i.e. experiencing two adaptation sessions rather than one) effects. The reason for including this variable in the exploratory analysis is that, while we do not anticipate any sequence or cumulative effects given each session is domain-specific, a statistically significant result for the Cohort variable may offer a positive (or negative) indication of the impact of approximations of practice on teacher self-efficacy, and may suggest that further research is warranted to disaggregate these two effects.
- The addition of  $\beta_4 (Treatment_{ij} * Period_j)$ , an interaction term that allows the effect of the treatment to vary across each of the three time periods. It is the product of the dummy variable for treatment and the vector of dummy variables for period. This term estimates the unique effect of the intervention in each specific session (e.g., the effect of treatment in period 1 vs. the effect of treatment in period 2). The reason for including this variable in the exploratory analysis is to explore whether any observed impact of the intervention (approximations of practice) on teacher self-efficacy varies depending on session. A statistically significant result for any of the sessions indicates that the inclusion of the approximation in that particular ECF training session is particularly impactful on teacher self-efficacy (relative to other sessions), and may suggest that further research is warranted.

Further exploratory analysis will explore the relationship between self-efficacy (the primary outcome) and the peer-assessed score for “*understanding how to apply training content*” within the scenario exercises that constitute part of the intervention (the approximation of practice).

For each of the “treatment” training sessions, the approximation of practice includes scenario-based exercises with participants asked either two or three questions. Each ECT acts as a ‘peer assessor’ by anonymously grading another (anonymous) ECT’s submitted answers to the scenario in real time, where each answer should contain three key features based on the content delivered earlier in the session. The answer will be scored 0-3 at a given time period, with the mean score taken in each time period where an ECT completes multiple (usually three but sometimes two) scenario-based exercises.

For the planned exploratory analysis of the relationship between self-efficacy (the primary outcome) and the peer-assessed score for understanding how to apply training content (described immediately above), we plan to perform a simple correlational analysis using Pearson’s  $r$ . This involves filtering out primary outcome data for each ECT’s “B” (business-as-usual) session(s) (i.e. only using their self-efficacy data) from the session(s) in which they experienced the approximation, and matching the primary outcome score for their “A” (adaptation) sessions with their peer-assessed score from scenario-based exercises from the adaptation itself. The resulting correlation coefficient ( $r$ ) will indicate the strength and direction of the linear relationship between the two variables, specifically for the instances where the intervention is active (i.e. sessions in which the approximations were used). The value of such a correlational analysis is to explore whether an ECT’s own self-efficacy is tightly correlated with their peers’ assessment of their understanding of how to apply training content from the session(s), potentially indicating whether teachers are over-optimistic, under-optimistic, or neither when it comes to their teaching ability.

It is worth noting a few limitations of this approach however. The **repeated nature of the data** means that observations from the same participant are not independent, which can inflate the statistical significance of a simple correlation (which does not account for this repeated structure). Also, by its nature, the **number of available data points** for this correlational analysis will be limited to the instances where the adaptation was applied (i.e. only half of the time), reducing analytical power. Finally, for these reasons and by its very nature, this analysis will **seek to establish correlation, not causation**, and will not indicate whether (increased/decreased) self-efficacy drives (increased/decreased) peer-assessed performance or vice-versa.

#### 4.3 Missing data analysis

Given the lack of covariate data collected by NIoT as part of their regular ECF training session survey (i.e. minimal personal data is being collected, with no collection of demographic data such as age, gender, etc.), we are limited in the sophistication of missing data analysis we can perform.<sup>18</sup> The lack of participant demographic data prevents the use of more sophisticated techniques such as multiple imputation or inverse probability weighting, as these methods require rich covariate data to accurately model missingness. We will however report the number of missing observations for each of the six sessions, and check whether there is a difference in the proportion missing either between adaptation (A) and business-as-usual (B) sessions, or between the two cohorts. If the missingness is balanced between the two conditions (A and B) and between the two cohorts (Cohort 1 and Cohort 2), the specified analysis will proceed in

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<sup>18</sup> As per the principle of data minimisation, only data necessary for administration and quality control of the training sessions is collected by NIoT, with the collection of any personal data minimised.

RStudio or Stata. If it appears that any data missingness is not balanced across either of these two domains, the following steps will be taken to understand whether the data are missing at random (MAR) or missing not at random (MNAR). MAR is when missingness in the data is correlated with other covariates (such as session condition (whether A or B), or cohort assignment) while MNAR is when missingness is correlated with any unobservables.

The missing data patterns will be identified using logistic regression models to predict missingness. Specifically, a binary variable will be created where the value 0 is assigned if any of the outcome data is missing and 1 if it is a complete observation. The logistic regression will then investigate whether this binary missingness variable is predicted by any of the covariate data (specifically session condition (whether A or B) and cohort assignment).

If missingness is predicted by either session condition or cohort assignment (MAR), complete case analysis may yield biased estimates. We will run the complete case analysis with and without covariates and compare the results.

- If the results are similar, we will proceed with a complete case analysis as it is likely to be unbiased but potentially underpowered.
- If the results are dissimilar, the data is likely to be MNAR (missing not at random). In this case, we will use Manski-type bounds: a pre-specified, resource-appropriate sensitivity analysis that provides a necessary interval for the true effect without resorting to high-resource modeling that is not proportionate to the constraints of the nimble trial. This involves imputing the minimum and maximum scores, to determine an interval for the true treatment effect that corrects for bias from differential attrition.

## 5. Implementation and process evaluation

### 5.1 Research questions

The implementation and process evaluation will answer the following research questions:

#### **Fidelity:**

1. To what extent do trainers stick to the core components as defined in the ToC? (adherence)
2. How much of the adaptations do ECTs receive? (exposure)
3. What are the characteristics of the ECTs who receive the adaptations? (reach)
4. How well are the interventions implemented? (quality)
5. What changes are made to the delivery of the adaptations by trainers and why? (adaptations)
6. How do the adaptations differ from usual practice? (programme differentiation)

#### **Theory:**

7. What factors relating to the context, Facilitators and ECTs influence the implementation and outcomes of the interventions, and in what ways? (moderators)
8. What are the perceived outcomes of the interventions for ECTs, including unintended outcomes and backfire effects? (perceived impact)
9. What mechanisms are perceived to underpin observed outcomes? (mechanisms)

## 5.2 Research methods

**Table 4: IPE methods overview**

| Research methods | Data collection methods                                                                               | Participants/ data sources<br>(type, number)    | Data analysis methods                             | Research questions addressed |
|------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------|------------------------------|
| Qualitative      | Semi-structured interview                                                                             | 6 ECTs                                          | Thematic analysis using the Framework approach    | All (1, 3-9)                 |
| Qualitative      | Semi-structured interview                                                                             | 2 facilitators                                  | Thematic analysis using the Framework approach    | 1-2, 4-6, 7, 9               |
| Quantitative     | Monitoring data (such as session feedback survey data (for quality of sessions); and attendance data) | All participants<br>(119 ECTs as of 13/10/2025) | Descriptive statistics, cross-tabulated by cohort | 2, 3, 4, 8                   |

### **Adherence definition:**

Facilitators stick to the core components as defined in the ToC, including:

- The approximations of practice will be delivered digitally during three 90-minute online training sessions delivered to ECTs in the 2025-2026 school year. The training sessions are delivered as part of NIoT's professional development curriculum for ECTs, with each session focussing on a different unit of study (or domain).
- Each session in which the approximations of practice are delivered will include two to three approximations of practice, delivered following input from the session lead.
- The approximations of practice will include scenarios that relate to session's unit of study (e.g. Behaviour Management).
- ECTs will be presented with the scenario and will respond individually in the appropriate format - this will be either:
  - Choosing and justifying a course of action from a set of options ('Decide' approximations).
  - Writing a specific response they would use in the classroom ('Script' approximation).
- After responding, ECTs are asked to review, mark and provide feedback to the response of a peer (both the response and the feedback are provided anonymously).
- ECTs then discuss the choices made in the anonymous examples with peers and the session lead, helping them to reflect on their practice.

## Qualitative methods

We will conduct qualitative interviews with ECTs and training session facilitators to address the research questions from multiple perspectives. Interviews with both ECTs and session facilitators will be semi-structured and will follow topic guides developed using the research questions and in collaboration with the intervention delivery teams at NIoT and Proxima Education. Interviews will be conducted using video conferencing software by a qualitative researcher from the project team.

*ECT Interviews:* We will conduct interviews with 6 ECTs, with each interview lasting 30 minutes. These interviews will aim to cover all IPE questions but will focus on:

- What are the characteristics of the ECTs who receive the adaptations? (reach)
- How well are the interventions implemented? (quality)
- How do the adaptations differ from usual practice? (programme differentiation)
- What factors relating to the context, staff and students influence the implementation and outcomes of the interventions, and in what ways? (moderators)
- What are the perceived outcomes of the interventions for ECTs, including unintended outcomes and backfire effects? (perceived impact)
- What are the causal links underpinning observed outcomes? (mechanisms)

ECTs will be purposively sampled. We will seek to speak to ECTs that:

1. Have attended at least two different module sessions where the adaptation is delivered.
2. Have received both the adaptation and BAU at least once.
3. Have attended only one module session (and therefore may be less engaged).

We will also seek diversity across gender and age, to ensure we capture a range of perspectives. Given the limited sample size we will aim to achieve a sample that includes at least one ECT aged 30-40 and one ECT aged 40+.

ECT interviews will be conducted between March - April 2026.

ECTs will be compensated for their time [via a shopping Voucher of £20].

*Facilitator Interviews:* We will conduct interviews with the 2 facilitators responsible for delivering all of the sessions included in the evaluation, with each interview lasting 30 minutes. This interview will focus on:

- To what extent do trainers stick to the core components as defined in the ToC? (adherence)
- How much of the adaptations do ECTs receive? (exposure)
- How well are the interventions implemented? (quality)
- What changes are made to the adaptations by trainers and why? (adaptations)
- How do the adaptations differ from usual practice? (programme differentiation)
- What factors relating to the context, facilitators and ECTs influence the implementation and outcomes of the interventions, and in what ways? (moderators)
- What are the perceived outcomes of the interventions for ECTs, including unintended outcomes and backfire effects? (perceived impact)

- What mechanisms are perceived to underpin observed outcomes? (mechanisms)

Facilitator interviews will be conducted towards the end of the IPE data collection period in May 2026, which will enable emerging findings from the interviews with ECTs to inform the interviews with Facilitators.

Facilitators will not be compensated for their time.

## Quantitative methods

Monitoring data collected by NIoT (such as session feedback survey data (for quality of sessions), and attendance data) will be analysed using frequency counts and percentages, cross-tabulated by cohort. This data includes:

- **Session attendance data:** this will allow us to investigate both programme reach and participant exposure to the intervention.
- **Engagement in self-study module exercise:** this data on the % completeness of the ECT's self-study exercises (completed between the ECF programme sessions), will allow us to investigate both engagement with the programme more generally and potential impact of the adaptation sessions on subsequent engagement.
- **Session feedback survey data:** three existing questions in NIoT's session feedback survey will allow us to consider both the quality of the sessions and their perceived impact for ECTs:
  - Q11: *"This live session supports my confidence in application at school by providing an opportunity to practice relevant scenarios and gain feedback"* (4-point scale)
  - Q13: *"How would you rate the quality of this session in terms of facilitation?"* (4-point scale)
  - Q14: *"How would you rate the content of this session?"* (4-point scale)

## 5.3 Analysis

### 5.3.1 Qualitative analysis

Data from the interviews will be analysed on an ongoing basis through the data collection period, to enable emerging findings to inform future interviews.

Data from interviews and focus groups will be analysed using the Framework approach (Ritchie et al, 2013). in three steps:

1. **Data management:** Summarising the data, alongside selected direct quotes, in a matrix. This facilitates systematic and comprehensive analysis by making the data accessible to the analyst. It enables case and theme based analysis, by allowing the analyst to look down columns (themes), across rows (cases) or both. The approach differs from coding which organises verbatim text into themes, without summarising.
2. **Description:** Describing the range of views on a theme, grouping these into categories that aid comprehension, and identifying links between these categories.
3. **Explanation:** Providing context for and explanation of the IE results, and developing a higher level of interpretation and abstraction.

A balance will be maintained between deduction (with themes deduced from the information outlined in the TiDieR and logic model) and induction. Verbatim participant quotations and case examples will be used to provide evidence and exemplify the theme(s) identified.

### 5.3.2 Quantitative analysis

The quantitative analysis of implementation data will be exclusively descriptive to efficiently assess programme exposure, reach, and ECT perception of quality and impact. Consistent with the constraints and scope of this nimble trial, this analysis is designed to be low-resource and easily replicable. Data will be aggregated and presented primarily using frequency counts, percentages, and means.

The core analysis for all collected monitoring data (attendance, self-study engagement, and survey feedback) will be conducted by cross-tabulating the results by cohort (Cohort 1 vs. Cohort 2) and, where possible, treatment condition (i.e. adaptation (A) vs. business-as-usual (B)) for each of the three evaluation sessions. Specifically, we will report:

1. **Attendance and reach:** Total attendance and the percentage of ECTs exposed to each session and treatment condition.
2. **Engagement:** The mean percentage of self-study module completeness, compared across cohorts to detect any impact from the adaptation sessions on engagement immediately afterwards.
3. **Perceived quality:** The mean scores and distribution (e.g., percentages selecting the top two points) for three session feedback questions (Q11, Q13, Q14), comparing:
  - Cohorts; to check for within-cohort sensitivity to the treatment.
  - The pooled 'A' sessions versus pooled 'B' sessions (across both cohorts); to provide a descriptive comparison of the perceived impact and quality of the adaptation versus business-as-usual delivery.

This descriptive approach provides the necessary fidelity checks without requiring complex statistical analysis that would exceed the scope of the IPE for this nimble trial.

## 6. Risks

**Table 5: Risk register**

| Risk                                                                                                                   | Likelihood of occurring | Magnitude of impact | Strategy to mitigate risk                                                                                                             | Responsible party | Timeframe (if applicable)                   |
|------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------------|
| Small post-attrition sample either due to poor recruitment of ECTs or poor data collection rates during the evaluation | Medium                  | High                | Engage in clear and consistent communication with participants and their schools to promote understanding and encourage participation | NIoT              | Beginning of the trial;<br>During the trial |

|                                                            |     |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                                    |
|------------------------------------------------------------|-----|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------------------------|
| Randomisation failure                                      | Low | High   | Use statistical software (e.g., R or Stata) for random allocation. The randomisation code will be independently quality assured by a second researcher at BIT.                                                                                                                                                                                                                                                                                                                                   | BIT              | Beginning of the trial             |
| Low response rate in self-report surveys (primary outcome) | Low | High   | Surveys take place as part of sessions, and are framed as a key part of the programme by the delivery team                                                                                                                                                                                                                                                                                                                                                                                       | Proxima and NIoT | During the trial                   |
| Lack of compliance (attendance at correct cohort/session)  | Low | High   | Work closely with the session facilitators to ensure they understand which session they should be delivering, when they will deliver that session and to whom the session will be delivered; Use monitoring (attendance) data to check for exposure to and reach of the intervention; Analyse the data on an Intention to Treat (ITT) basis, meaning outcomes will be analysed based on the cohorts ECTs were originally allocated to, regardless of whether they received the full intervention | BIT              | During the trial + During analysis |
| Differential attrition                                     | Low | Medium | Use of crossover design means that no participant is in a “control only” group, and so sequence allocation (trial arm) should not lead to differential attrition. Differential attrition is also theoretically possible if ECTs are less likely to provide data based on whether a session is A (adaptation) or B (business-as-usual), but given the nature of the intervention we foresee no reason why                                                                                         | BIT              | During analysis                    |

|  |  |  |                                                                                                                                                                                                                                                                                          |  |  |
|--|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|  |  |  | this would be the case. If we detect differential attrition, by either treatment or cohort, with a difference in attrition between the two sets of data in either of these domains by 5 percentage points or more, we will address this via the application of Lee Bounds. <sup>19</sup> |  |  |
|--|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|

## 7. Timeline

**Table 6: Timeline**

| Dates          | Activity                                                                              | Staff responsible/leading              |
|----------------|---------------------------------------------------------------------------------------|----------------------------------------|
| September 2025 | Ethical approval obtained for project                                                 | Niall Daly (BIT)                       |
| September 2025 | Project data protection and security checklist approved                               | Callum O'Mahony (BIT)                  |
| September 2025 | Nimble trial protocol first draft submitted to EEF                                    | Patrick Taylor (BIT)                   |
| September 2025 | Recruitment documents drafted (information sheet, withdrawal form and privacy notice) | Callum O'Mahony (BIT)                  |
| October 2025   | Intervention TIDieR and ToC refined                                                   | BIT with support from NIoT and Proxima |
| October 2025   | Nimble trial protocol second draft submitted to EEF                                   | Patrick Taylor (BIT)                   |
| October 2025   | DSA between BIT, NIoT, Proxima drafted and signed                                     | Callum O'Mahony (BIT)                  |
| October 2025   | Nimble trial protocol third draft shared with NIoT / Proxima for review               | Patrick Taylor (BIT)                   |
| October 2025   | Recruitment documents shared with ECTs                                                | NIoT                                   |

<sup>19</sup> While [EEF's statistical analysis guidance \(2022\)](#) advises that multiple imputation should be used in the presence of differential attrition, we recommend the use of Lee Bounds in this nimble trial. Lee Bounds relies on a single, plausible assumption of monotonicity to provide a robust range for the treatment effect, without needing to model the complex relationship between attrition and outcomes.

|                            |                                                                                                                                                               |                                        |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| October 2025               | Pseudo-anonymised ECT IDs created for all participating ECTs and shared with BIT                                                                              | NIoT                                   |
| October 2025               | BIT randomises ECTs to ABA or BAB conditions and shares outcome with NIoT                                                                                     | Niall Daly (BIT)                       |
| October 2025               | Primary outcome measure (self-efficacy) added to post-session surveys                                                                                         | NIoT                                   |
| November 2025              | Nimble trial protocol finalised                                                                                                                               | Patrick Taylor (BIT)                   |
| November 2025              | Approximations used to conduct exploratory correlational analysis (Peer-assessed understanding of how to apply training content) are ready for use in-session | Proxima                                |
| November 2025              | IPE Instruments designed (interview focus group topic guides)                                                                                                 | Callum O'Mahony (BIT)                  |
| November 2025 - July 2026  | ITTECF development sessions delivered - approximations of practice / BAU                                                                                      | NIoT / Proxima                         |
| November 2025 - July 2026  | Outcome data collected and shared with BIT (survey self-efficacy responses; approximation scores on 0-3 scale and agreed covariate data)                      | NIoT / Proxima                         |
| November 2025 - July 2026  | Monitoring data contributing to the quantitative IPE collected and shared with BIT                                                                            | NIoT / Proxima                         |
| November 2025              | IPE recruitment documents drafted                                                                                                                             | Callum O'Mahony (BIT)                  |
| November 2025 - April 2026 | IPE interview participants recruited                                                                                                                          | NIoT (using documents provided by BIT) |
| December 2025 - April 2026 | Qualitative IPE data collected                                                                                                                                | Callum O'Mahony (BIT)                  |
| March - August 2026        | Outcome data cleaning and analysis                                                                                                                            | Niall Daly (BIT)                       |
| March - August 2026        | Quantitative IPE data cleaning and analysis                                                                                                                   | Niall Daly (BIT)                       |
| March - June 2026          | BIT conducts qualitative IPE data analysis                                                                                                                    | Callum O'Mahony (BIT)                  |
| August 2026                | Trial report submitted to EEF (first draft)                                                                                                                   | Patrick Taylor (BIT)                   |

## 8. Ethics and registration

All BIT trials need to have been through BIT's internal research ethics process. This trial was assessed as being Low Risk. The project team, following both BIT's Research Ethics Process and BIT's Internal Ethics Review Policy, determined the project to be low risk across all but one dimensions of the research:

- Participants (ECTs aged 18+ in England) were deemed to be non-vulnerable
- The proposed research methods (use of programme administrative data and survey data for the impact evaluation; use of interview and programme monitoring data for the implementation and process evaluation) was deemed to be low-risk
- We anticipate no risk of emotional, physical and/or financial harm to participants related to the proposed research activities
- We anticipate no health and safety risks for researchers related to any research activity
- The research subject matter relates to non-sensitive topics in a politically and socially uncontroversial area
- BIT has run similar projects with similar populations before

On all dimensions barring one, the trial is determined to have minimal ethical risks. This is a light-touch intervention that is being delivered within the existing ITTECF context, with minimal personal data being collected on ECTs. The only dimension in which the risk is identified as medium-risk rather than low-risk relates to the nature of the data being collected. Personal, individual-level ECT data will be collected for (a) all ECTs that complete the intervention and complete NIoT's routine follow up surveys and (b) for ECTs and session leads that agree to participate in the IPE. On (a), ECTs will be informed that this personal, individual-level data will be collected in a Privacy Notice shared with them by NIoT. Where possible, NIoT will pseudo-anonymise ECT data before it's shared with BIT. On (b), ECTs and session leads will provide their explicit consent to participate in the IPE.

All personal, individual-level data collected will be treated with the strictest confidence by BIT, unless safeguarding or whistleblowing concerns are raised during the interview and require disclosure in line with any applicable laws and procedures on data protection and safeguarding that BIT must comply with. Reporting outputs will contain anonymised quotes and case examples which will not be able to be traced back to specific individuals. BIT has implemented appropriate measures to ensure secure storage and handling of Personal Data, including obtaining a Cyber Essentials Plus certification and developing a comprehensive Data Handling Protocol. We are registered with the UK ICO under the terms of the Data Protection Act 2018. We are confident that our processes will ensure that the tutor's employer will not be able to link our findings to a particular tutor.

The following table highlights in orange where the current trial falls in terms of risk for different dimensions:

| Dimension               | Low risk                                                                                                   | Medium risk                                                                                                                                   | High risk                                                                                                                                                                                                                                                                                                             |
|-------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Research methods</b> | Standard research methods commonly applied within the substantive area of the research.                    | Standard research methods that may not have been applied within a particular substance area and that may prove controversial or be sensitive. | Non-standard research methods that may be highly controversial or sensitive.                                                                                                                                                                                                                                          |
| <b>Participants</b>     | Non-vulnerable adults (i.e. 18 years+ in England & Wales or as stated in applicable national legislation). | Children without vulnerable characteristics in a regular setting (school/youth club).                                                         | Individuals from vulnerable groups (e.g. refugees) or are children outside regular settings or do not have legal capacity within the meaning of the Mental Capacity Act 2005 or relevant national legislation. (NB: any research with the latter group requires approval via an additional legally mandated process.) |
| <b>Subject matter</b>   | Research relates to a politically and socially uncontroversial area, such as recycling.                    | Research relates to an issue of some contention but is relatively light-touch                                                                 | Research relates to a highly-contentious, potentially currently debated or partisan issue                                                                                                                                                                                                                             |
| <b>Nature of data</b>   | Aggregate anonymous data or data on non-contentious topics (e.g. recycling behaviour) or                   | Individual-level data not routinely collected.<br><br>We are collecting individual-level data (interview data and) not routinely              | Individual-level, highly sensitive or special category data routinely or not routinely collected. Also, criminal offence data                                                                                                                                                                                         |

|                         |                                                                                                                                                                                              |                                                                                                               |                                                                                                                                    |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
|                         | routinely collected admin data.                                                                                                                                                              | collected, but this data is not particularly sensitive.                                                       |                                                                                                                                    |
| <b>Legal exposure</b>   | The legal framework in which we are operating is clear. If the project is in a foreign country: we have worked in this country and a similar context before and know the legal requirements. | The legal situation with respect to any aspect (data collection, participant group, intervention) is unclear. | The legal situation with respect to any aspect (data collection, participant group, intervention) is controversial or problematic. |
| <b>Unknown unknowns</b> | BIT has run a similar project in this domain before <sup>20</sup>                                                                                                                            | BIT has some experience in the domain, but certain aspects of the project are new to BIT.                     | BIT has no prior experience in this policy domain.                                                                                 |

Participating ECTs will be made aware of the trial via an information sheet and privacy notice shared with them by NIoT. The information sheet will include a withdrawal form which participants can complete and return either prior to the trial start date. If they do this, participants will be withdrawn from the trial and any data held for them will be securely deleted.

Before launching the trial, BIT will register it at the Open Science Framework (osf.io). We will ensure the trial registry is updated with outcomes at the end of the project.

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<sup>20</sup> BIT has extensive experience both of running nimble trials and evaluating teacher professional development, including:

- a. [Three nimble RCTs](#) evaluating interventions to boost engagement and attendance with the National Tutoring Programme.
- b. [A formative scale up evaluation](#) of the Embedding Formative Assessment mentor training programme.
- c. [A pilot evaluation](#) of the Maths-for-Life train-the-trainer programme.
- d. [A large-scale RCT and IPE](#) of the Reciprocal Reading programme.

## 9. Data protection

LEGITIMATE INTERESTS: Our lawful basis for processing **personal** data is legitimate interests (as per Article 6 (1) (f) of the GDPR) and we have considered that participants' interests and fundamental rights do not override those legitimate interests.

Please see Appendix D for more information. We are not collecting any personal special category data.

## 10. Personnel

| Project team member | Organisation      | Project role                                                     |
|---------------------|-------------------|------------------------------------------------------------------|
| Dr Patrick Taylor   | BIT               | Principal Investigator                                           |
| Lal Chadeesingh     | BIT               | Quality Assurance and Senior Project Advisor                     |
| Tim Hardy           | BIT               | Senior Quantitative Researcher                                   |
| Callum O'Mahony     | BIT               | Project Manager and Qualitative Researcher                       |
| Niall Daly          | BIT               | Trial Coordinator and Quantitative Researcher                    |
| Calum Davey         | NIoT              | Research Manager                                                 |
| Clare Copper        | NIoT              | Research Support                                                 |
| Katy Micklewright   | NIoT              | ITTECF Session Facilitator (implementation) and Research Support |
| Robbie Coleman      | Proxima Education | Intervention Developer and Implementation Support                |
| Jasmine Leonard     | Proxima Education | Intervention Developer and Implementation Support                |
| Elly Plant          | Proxima Education | ITTECF Session Facilitator (implementation) and Research Support |

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## 12. Appendix

### Appendix A. Original TSES (Teachers' Sense of Efficacy Scale)

#### Teachers' Sense of Efficacy Scale<sup>1</sup> (short form)

| Teacher Beliefs                                                                                                                                                                                                                                                            |                                                                                                  | How much can you do? |             |                |             |              |     |     |     |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------|-------------|----------------|-------------|--------------|-----|-----|-----|-----|
| Directions: This questionnaire is designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below. Your answers are confidential. |                                                                                                  | Nothing              | Very Little | Some Influence | Quite A Bit | A Great Deal |     |     |     |     |
| 1.                                                                                                                                                                                                                                                                         | How much can you do to control disruptive behavior in the classroom?                             | (1)                  | (2)         | (3)            | (4)         | (5)          | (6) | (7) | (8) | (9) |
| 2.                                                                                                                                                                                                                                                                         | How much can you do to motivate students who show low interest in school work?                   | (1)                  | (2)         | (3)            | (4)         | (5)          | (6) | (7) | (8) | (9) |
| 3.                                                                                                                                                                                                                                                                         | How much can you do to get students to believe they can do well in school work?                  | (1)                  | (2)         | (3)            | (4)         | (5)          | (6) | (7) | (8) | (9) |
| 4.                                                                                                                                                                                                                                                                         | How much can you do to help your students value learning?                                        | (1)                  | (2)         | (3)            | (4)         | (5)          | (6) | (7) | (8) | (9) |
| 5.                                                                                                                                                                                                                                                                         | To what extent can you craft good questions for your students?                                   | (1)                  | (2)         | (3)            | (4)         | (5)          | (6) | (7) | (8) | (9) |
| 6.                                                                                                                                                                                                                                                                         | How much can you do to get children to follow classroom rules?                                   | (1)                  | (2)         | (3)            | (4)         | (5)          | (6) | (7) | (8) | (9) |
| 7.                                                                                                                                                                                                                                                                         | How much can you do to calm a student who is disruptive or noisy?                                | (1)                  | (2)         | (3)            | (4)         | (5)          | (6) | (7) | (8) | (9) |
| 8.                                                                                                                                                                                                                                                                         | How well can you establish a classroom management system with each group of students?            | (1)                  | (2)         | (3)            | (4)         | (5)          | (6) | (7) | (8) | (9) |
| 9.                                                                                                                                                                                                                                                                         | How much can you use a variety of assessment strategies?                                         | (1)                  | (2)         | (3)            | (4)         | (5)          | (6) | (7) | (8) | (9) |
| 10.                                                                                                                                                                                                                                                                        | To what extent can you provide an alternative explanation or example when students are confused? | (1)                  | (2)         | (3)            | (4)         | (5)          | (6) | (7) | (8) | (9) |
| 11.                                                                                                                                                                                                                                                                        | How much can you assist families in helping their children do well in school?                    | (1)                  | (2)         | (3)            | (4)         | (5)          | (6) | (7) | (8) | (9) |
| 12.                                                                                                                                                                                                                                                                        | How well can you implement alternative strategies in your classroom?                             | (1)                  | (2)         | (3)            | (4)         | (5)          | (6) | (7) | (8) | (9) |

## Appendix B. An example of an Approximation of Practice

1. 'Decide' approximation. Participants are required to read a scenario, choose between two possible courses of actions and justify this decision.

Questioning

KZTFB

You have been teaching your Year 10 class about parallel circuits.

You have explained to pupils that the total resistance in a circuit decreases as more resistors are added in parallel, as the additional resistors create more paths for the current to flow.

A common misconception is that adding more resistors in parallel *increases* the total resistance of a circuit.

You are working with Arjun and want to check his understanding.

What would you ask Arjun?

1

Arjun, what happens to the total resistance of a circuit when more resistors are added in parallel?

2

Arjun, do you feel confident that you understand why resistance decreases as more resistors are added in parallel?

2. 'Script' approximations: participants are required to read a scenario and then script what they would say and / or do in response, without the provision of pre-written courses of action to choose from.

You are talking to two Year 7 pupils, Georgie and Zarina, about terminal velocity.

You want to extend their understanding of the forces involved when an object reaches terminal velocity. For example, that at terminal velocity the downward force of weight is equal to the upward force of air resistance.

**YOU:** *Georgie, can you explain what forces are acting on a skydiver when they reach terminal velocity?*

**GEORGIE:** *The skydiver reaches terminal velocity when the forces acting on them are balanced.*

**What would you say next?**

Type your response here...

500/500 characters remaining

SUBMIT

## **Appendix D. Additional data protection information**

### **1. Legal bases for data processing**

LEGITIMATE INTERESTS: Our lawful basis for processing **personal** data is legitimate interests (as per Article 6 (1) (f) of the GDPR) and we have considered that participants' interests and fundamental rights do not override those legitimate interests.

It is necessary in BIT's 'legitimate interests' to process the personal data identified above in order to deliver a meaningful RCT that has been commissioned by EEF (commercial interests). The research project fulfils BIT's core business aims including undertaking research, evaluation and information activities in sectors that will deliver social impact. This project has broader societal benefits; it tests an adaptation to the Early Career Framework (ECF) teacher training programme during its 2025-28 implementation phase and will generate evidence about how digital approximations of practice affects engagement, take-up, and participant learning outcomes. The findings will inform future policy decisions and help providers improve their programme design, while also contributing to the broader evidence base on effective professional development for teachers.

### **2. Our approach to GDPR compliance**

BIT is minimising the collection of personal data wherever possible in this project. We are collecting data for the impact evaluation against anonymised ECT IDs rather than names. We have performed a risk assessment analysis and concluded that we do not consider these data to be personal.

We will, however, need to collect personal data from the session leads and ECT who participate in interviews as part of the implementation and process evaluation. A privacy notice will be hosted on BIT's website, which explains what personal data we are collecting and why, our legal basis for doing so, who will have access to the data, our data security arrangements and our plans for data retention. We have appointed a Data Protection Officer (DPO) who is responsible for overseeing questions in relation to this privacy notice. The privacy notice contains the DPO's contact details, and informs the reader of their legal rights, including the right to make a complaint at any time to the Information Commissioner's Office (ICO), the UK supervisory authority for data protection issues ([www.ico.org.uk](http://www.ico.org.uk)). The privacy policy asks these tutors to make sure the details they provide are accurate and up to date, and to let us know about any changes as soon as possible.

All personal data collected as part of the study will be treated with the strictest confidence by BIT and processed only in accordance with the requirements of the GDPR and the Data Protection Act 2018. BIT will not use any personal data in any report arising from this project. BIT is collecting and processing personal data solely for the purposes of proper delivery, management and evaluation of the project.

#### **2.1. Data security**

We take reasonable steps to protect personal information and follow procedures designed to minimise unauthorised access, alteration, loss or disclosure of personal information.

Taking into account the state of the art, the costs of implementation and the nature, scope, context and purposes of processing as well as the risk of varying likelihood and severity for the rights and freedoms of natural persons, we implement appropriate technical and organisational measures to ensure a level of security appropriate to the risk of processing.

We ensure that those who have permanent or regular access to personal data, or that are involved in the processing of personal data, are trained and informed of their rights and responsibilities when processing personal data. We provide such access on a need-to-know basis, and have measures in place which are designed to remove that access once it is no longer required.

Physical personal devices used by BIT are encrypted to protect personal data.

We have put in place procedures to deal with any suspected personal data breach and will notify participants and any applicable regulator of a breach where we are legally required to do so.

## **2.2. All parties with access to the data**

The personal data that BIT collects will be accessed by a limited number of researchers and advisors in BIT's team working on this project.

BIT may disclose information to third parties in connection with the purposes of processing personal data set out in the privacy notices. These third parties may include:

- other companies in BIT's group [that are based within the United Kingdom];
- regulators, law enforcement bodies and the courts, in order to comply with applicable laws and regulations, assist with regulatory enquiries, and cooperate with court mandated processes, including the conduct of litigation;
- suppliers, research assistants and sub-contractors who may process information on behalf of BIT. These third parties are known as data processors and when we use them we have contractual terms and policies and procedures in place to ensure that personal data is protected. This does not always mean that they will have access to information that will directly identify individuals as we will share anonymised or pseudonymised data only wherever possible. We remain responsible for personal information as the controller; and
- any third party to whom we are proposing to sell or transfer some or all of our business or assets.

We may also disclose personal information if required by law, or to protect or defend ourselves or others against illegal or harmful activities, or as part of a reorganisation or restructuring of our organisations.

## **2.3. Data retention**

We will not retain any personal data longer than it is needed to deliver, manage and evaluate the project. The anticipated date of deletion of personal data is April 2027.

## **3. Data processing roles**

For the personal data we collect: Behavioural Insights Ltd (the legal name of Behavioural Insights Team (BIT)) is the controller and is responsible for the personal data.

As noted in the section above, we may share personal data with a limited number of trusted data processors solely for the purposes of supporting the delivery, management and evaluation of the project. This will be detailed in the privacy notice on our intervention website.

It will not be necessary to archive any personal data from this project.