The contamination checklist

Category	Question	Contamination risks	
		Low	High
Delivery modalities	1. Does the intervention involve one-to-one (or small group) exposure (to a teacher, tutor, teaching assistant, material, platform, or device)?	YES	NO
	2. Does the intervention involve using external resources (such as equipment, devices, or materials) specific to the intervention?	YES	NO
	3. Does the intervention involve the use of staff who are not regularly part of the school's personnel (external staff)?	YES	NO
	4. Are the intervention and control groups clearly defined, and is the intervention administered to children in the intervention group separately?	YES	NO
Transferability of the intervention	5. How easy is it to 'transfer/share' the whole intervention package with children in the control group?	Difficult	Easy
Contamination agent	6. Who would be the main contamination agent (i.e. the most likely person responsible for transferring/sharing the intervention with children in the control group)?	Peers / parents	Teachers / practitioners
Mechanisms / pathways to impact	7. To what extent is the delivery modality (i.e. one to one exposure) the core mechanism determining impact?	Completely	Minimally
	8. To what extent is change in teachers' outcomes (knowledge, practice or behaviour) the core mechanism determining impact (when teachers also interact with children in the control group)?	Minimally	Completely

How to use the contamination checklist?

Contamination is often a concern when considering individual-level randomisation as a possible trial design to assess the impact of an intervention.

The contamination checklist has been designed to help evaluators assess contamination risks and to explore how contamination might occur if the trial was conducted using an individual-level randomised design. The checklist guides evaluators in assessing the likelihood and impact of contamination based on the intervention's design, how it might be shared with the control group, by whom, and how these factors influence the severity of contamination.

Four categories of the intervention design, affect contamination risks in an individual-level randomised trial:

- **Delivery modalities.** How the intervention is accessed and delivered.
- **Transferability of the intervention.** How easy it is to 'transfer/share' the intervention to the control group.
- **Contamination agent.** Who the contamination agent is—what are the skills and capacities of the person most likely to transfer the intervention to the control group.
- **Mechanisms/pathways to impact.** What are the core mechanisms to determine the impact of the intervention.

For each category, a set of questions have been developed to help evaluators assess how contamination might occur in practice and determine whether the risk is low or high.

If contamination risks are deemed too high, individual-level randomisation might not be the most appropriate design for the trial. Conversely, if contamination risks are low or manageable, individual-level randomisation can be considered.

However, the final decision on the most appropriate level of randomisation on a trial will be determined by several factors, which extend beyond contamination risks, including how appropriate and feasible the design is perceived, and the sample size and budget required by an alternative trial design.

The contamination checklist: Further explanations

Delivery modalities

1. Does the intervention involve one-to-one (or small group) exposure (to a teacher, tutor, teaching assistant, material, platform, or device)?

Where the intervention involves one-to-one exposure, for example, to a teacher, tutor, teaching assistant, material, platform, or device, it is usually easier to restrict access to children in the intervention group only, so contamination risks are lower.

2. Does the intervention involve using external resources (such as equipment, devices, or materials) specific to the intervention?

Where the intervention involves the use of specific resources, specifically sourced or received to deliver the intervention, it is easier to restrict access to children in the intervention group only, so contamination risks are lower.

3. Does the intervention involve the use of staff who are not regularly part of the school's personnel (external staff)?

Where the intervention involves the use of external staff (like external providers, external tutors, etc.), it is less likely that they will have contact with children and/or other teachers in the control group, thus reducing contamination risks.

4. Are the intervention and control groups clearly defined, and is the intervention administered to children in the intervention group separately?

If access is restricted and the intervention is delivered in a physically separate space, for example, in a separate classroom, it is less likely that children in the control group can hear, absorb, or be exposed to the intervention thus, contamination risks will be lower. Another factor to consider is how clearly defined and fixed intervention and control groups are, both in terms of teachers/practitioners and children. Consider whether, for example, there is particularly high turnover of staff and/or children that would make the composition of treatment and control groups unclear or excessively variable.

Transferability of the intervention

5. How easy is it to 'transfer/share' the whole-intervention package with children in the control group?

Complex and long interventions with multiple components, which require time and resources to be conducted, will be more difficult to 'transfer' comprehensively to the control group. For example, if the intervention involves using a device or one to one exposure (that requires time), the transferring/sharing will be more difficult than, for example, sharing an SMS or a book, which might be a relatively easy thing to share. It is important to consider the length and complexity of the whole-intervention package too. For example, if the intervention involves multiple complex components or receiving multiple SMSs over a long period, sharing the whole-intervention package could be time and resource intensive and therefore, unlikely to happen (or to happen to an extent that it affects outcomes in the control group).

Contamination agent

6. Who would be the main contamination agent (i.e. the most likely person responsible for transferring/sharing the intervention with children in the control group)?

If contamination happened, then it would need to be considered, who the most likely person responsible for transferring/sharing the intervention with the control group would be. Different agents may be more or less able to contaminate, depending on factors such as time, resources, motivation, and skills. For example, in many situations, we might expect teachers or practitioners to be able to transfer an intervention with higher fidelity, quality, and impact (and thus, pose higher contamination risks) than when an intervention is shared between children or parents.

Mechanisms/pathways to impact

7. To what extent is the delivery modality (i.e. one to one exposure) one of the core mechanisms determining impact?

When the delivery modality is one of the core mechanisms determining impact and the 'transfer' of the intervention to the control group occurs via a different delivery modality, contamination risks are lower. This is because the contamination agent would not be able to deliver the intervention at similar fidelity, quality, and impact. For example, if a teacher has learned how to deliver an intervention well, but the one-to-one time provided to children or the access to a special equipment or device were key to the intervention's impact, then the control group's exposure to the teacher is not likely to lead to effective contamination.

8. To what extent is change in teachers' outcomes (knowledge, practice or behaviour) one of the core mechanisms determining impact (when teachers also interact with children in the control group)?

If the intervention aims to change or improve teacher outcomes (such as their knowledge, practice, behaviour, or process), it will be more difficult for the teacher to refrain from using this knowledge or practice when engaging with all children, including children in the control group (if the teacher interacts with the control children). Interventions in this category include Continuing Professional Development programmes, for example.