



Best practice in conducting RCTs: Lessons learnt from an independent evaluation of the Response-to-Intervention programme



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ABSTRACT

This paper presents the findings of the first independent UK evaluation of a large-scale randomised controlled trial of Response-to-Intervention, used as a catch-up literacy intervention. A total of 385 pupils in their final year of primary school (Year 6) were involved in the study (181 treatment and 204 control). These were identified as those at-risk of not achieving the threshold Level 4 in English at Key Stage 2. The pupils came from 49 schools across England. Twenty-seven schools were randomised to receive treatment immediately and 22 schools, which formed the control, were randomised to receive the intervention later. RTI was delivered in the summer term in preparation for pupil transfer to secondary school. The overall impact based on the standardised New Group Reading Test (NGRT) showed an 'effect' size of +0.19, and of +0.48 when considering only free school meal eligible pupils. However, these results must be viewed with considerable caution given the high attrition (over 25%) especially from the control group, and unclear identification of pupils eligible for the intervention. The fact that the evaluators did not have direct contact with schools when trying to identify eligible pupils, and that the developers wanted to use the pre-test to identify eligible pupils, led to this being a weak trial. The significance of the work therefore lies at least as much in the lessons learnt as in the headline figures. We learnt that ideally no more than two parties should be involved in communicating with schools, so that relevant instructions are passed quickly and acted upon promptly. This helps minimise the risk of misunderstanding and dropout post-allocation. Prior training on the technicalities of trials and research in general is necessary for both developers and any staff delivering the intervention so that all parties involved understand their commitment and the need to provide accurate and complete data. In future trials of RTI, it would be better for individual eligible pupils to be randomised rather than schools. RTI should ideally be given a whole year to allow the full cycle to be implemented, and it should be delivered daily for at least 30 minutes.

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1. Introduction

This paper describes the findings of the first large-scale UK randomised controlled trial of a widely popular multi-tiered intervention known as Response-to-Intervention (RTI). The aim was to assess the impact of RTI as a literacy catch-up intervention. As this was an efficacy trial, a secondary aim was to assess the fidelity of implementation to identify barriers so that lessons can be learnt which will inform future trials. The first part of the paper outlines the existing evidence on RTI and the rationale for this new study. This is followed by a discussion of the methods. The paper then presents the findings from the impact evaluation in terms of pupil test scores and the process evaluation. It finishes with a

discussion of the lessons learnt and makes recommendations for future implementation of RTI and the conduct of trials more generally.

2. Background

There have been increasing concerns that some children in England are moving from primary to secondary school without achieving the expected threshold level of literacy. Previous evidence suggests that these children are not likely to catch up and are more likely to continue to fall further behind their peers (Galton, Gray, & Ruddock, 1999; Sainsbury, Whetton, Keith, & Schagen, 1998). Since the 1970s, there has been considerable research looking into bridging this gap during the transition. And policies such as the National Curriculum and the National Literacy Strategy were introduced to try and ensure continuity of curriculum between the two phases.

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Despite these efforts, the gap persists especially for those pupils from disadvantaged backgrounds. In May 2012, the Department for Education (UK) awarded the Education Endowment Foundation (EEF) a grant of £10 million to fund literacy catch-up projects. Catch-up literacy projects are a set of educational interventions intended for pupils struggling to reach what are officially deemed the age-appropriate levels in reading (and perhaps numeracy). They were intended to benefit pupil premium children (predominantly children who are eligible for free school meals) who would otherwise enter secondary school below Level 4 in literacy at Key Stage 2 (Gov. UK, 2012).

A review of such interventions addressing catch-up literacy was commissioned by the EEF in 2011 (See & Gorard, 2014). One of the more promising approaches identified in the review, and subsequently funded as an intervention by the EEF was Response-to-Intervention (RTI). Response-to-Intervention is a multi-tiered approach that involves initial screening to identify students' learning needs using research-based instructions with on-going monitoring of progress and with different levels of intensity (or tiers) to meet pupils' learning needs. It is a personalised and targeted intervention developed in the United States. The theoretical and empirical framework of the approach was based on work by Clay (1991) and Fountas and Pinnell (1996, 2006). According to Clay children learn literacy skills by developing an inner control of strategies for processing text. If a piece of text is too difficult, the child cannot develop this control. So any text used should be pitched at the right level. With effective and explicit teaching, the teacher can help the child build a strategy to enable them to process the text. Based on their work on Reading Recovery, Fountas and Pinnell developed an approach called Guided Reading using books matched to children's abilities employing differentiated instruction in small groups, gradually building up the child's inner control. This was the basis for the differentiated levels or tiers that formed the basis of the RTI approach.

Early evidence from the US suggested that this approach is effective with pupils in the transition period, defined in England as the stage when pupils move from Year 6 (final year of primary school) to Year 7 (first year of secondary school). One fairly large RCT in the US (Vaughn & Fletcher, 2012), using RTI as a remedial intervention, reported positive effects on decoding, fluency and reading comprehension ($d = +0.16$) for those receiving both Tier 1 (whole class) and Tier 2 (small group) of the intervention compared to those who received only Tier 1. The study involved 784 pupils in 6th, 7th and 8th grades (English Years 7, 8 and 9). Another randomised study by some of the same authors, but with only 30 pupils in Grades 6–8, suggested that the intervention had a positive effect for pupils with severe reading difficulties, although the gains were not big enough to close the gap with typically performing pupils (Leroux, Vaughn, Roberts, & Fletcher, 2011). The intervention was administered to treatment students every day in a 45–50 min period.

A study by Graves, Brandon, Duesbery, McIntosh, and Pyle (2011) showed that RTI was particularly efficacious for pupils from disadvantaged backgrounds with learning difficulties, and was more effective for improving oral fluency than reading comprehension. All of the pupils involved were 'below' or 'far below' basic level in literacy. This was a quasi-experimental study that compared small group intensive reading instruction (Tier 2) with a control group ('business as usual') involving 6th Graders with and without learning disabilities. The duration was 30 h over 10 weeks.

In another study, by Faggella-Luby and Wardwell (2011), positive results were reported for the small group (Tier 2) intervention for older children (Grade 6), but not for the younger ones (Grade 5). As the sample was quite small ($n = 86$), it is possible that the result could be a reflection of teacher effectiveness or level of maturity of the pupils rather than due to the intervention. Study

participants were identified as disadvantaged children in the 5th and 6th grades in an urban middle school. Students were randomly assigned to one of the three instruction practices: (a) experimental (story structure to improve reading comprehension), (b) comparison (typical practice) and (c) control (sustained silent reading). Each session was 30 min and was administered 2–3 days per week for 18 weeks.

The evidence on RTI so far is predominantly from the US, and has mostly involved small samples or focused on those with learning disabilities. It was not yet clear whether RTI was suitable with 10 and 11 year olds struggling with literacy in the UK. In the US despite the range of resources, books, materials and training programmes available, there was little guidance on how RTI could be implemented within the framework of a regular classroom. In the UK, teaching materials have not been generally available until now, and there have hitherto not been any large-scale RCTs that test the programme in classroom conditions. There is therefore a case for an efficacy trial in the UK.

3. Study aims

The aim of this new study was to determine the effect of RTI on the literacy skills of children identified as not achieving the expected Level 4 at KS2 in England.

Since this was the first large-scale randomised-controlled trial in the UK, and previous implementations of the intervention had been patchy with underdeveloped resources, a secondary aim was to assess the fidelity of treatment, and to identify the challenges teachers may face in delivering the intervention in real classroom conditions. It is hoped that this will provide guidance for future applications of RTI in the UK.

4. The intervention

The RTI programme in this study was designed by the Centre for the Use of Research and Evidence in Education (CUREE) who developed the specialist tools and resources, and delivered the training. Training was conducted prior to the implementation of the programme and after schools had been randomised. The training was a 3-day event which included an introduction to the concept of RTI, and the range of tools and protocols. Teachers were shown how to use these in screening pupils for eligibility and assessing their needs, and how to select appropriate research-based approaches. In addition, treatment teachers also received on-going support provided by another organisation known as AfA3As (Achievement for All 3As) through in-school coaching using their Achievement Coaches as part of the AfA programme. Teachers in the control schools, on the other hand, did not receive any special training. They continued teaching as normal, including any interventions that they might have already been undertaking.

4.1. The programme description

The RTI programme used in this trial follows a sequence of stages. It begins with an initial screening to identify the individual needs of the pupils using the Close-Case Analysis Tool. The tool helps staff to determine the literacy areas to focus on for each pupil, such as phonics, fluency or comprehension. It also helps to determine the degree of intensity for the intervention – whether it would be Tier 1 (whole class) or Tier 2 (small group) intervention. The more intensive (Tier 3) is a one-to-one or pair work intervention. This is only recommended if the number of children with a particular issue in an area of literacy is small or if the pupils involved have already had interventions targeting this area, and

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