

NFER Evaluation of the Direct Instruction in Key Stage 3 Connecting Maths Concepts Pilot for the Education Endowment Foundation (EEF)

Evaluation Information sheet for schools

Please read this evaluation information sheet in conjunction with the '*Direct Instruction Mathematics pilot – Memorandum of Understanding*' which gives details about the Connecting Maths Concepts programme.

What are the aims of the evaluation?

The Education Endowment Foundation (EEF) is funding the Midland Academies Trust (MAT) and US-based National Institute for Direct Instruction (NIFDI) to deliver a pilot maths intervention, Connecting Maths Concepts (CMC), to Key Stage 3 students. The programme is based on the Direct Instruction model of teaching, which emphasises clearly specified, scripted lessons, designed around small learning increments.

It is intended that the programme will increase students' confidence, enjoyment, knowledge and motivation to study maths, and ultimately their attainment in maths, whilst also improving their behaviour in, and motivation to attend, maths lessons.

The pilot is being undertaken between April 2019 and March 2020 and will involve 12 secondary schools who will each be delivering the programme to up to 42 students across years 7 to 9.

The aims of the evaluation are to explore:

- **evidence of promise** – including what needs the programme addresses, the quality of teaching provided and perceived outcomes
- **feasibility to deliver** – including whether the right students are reached, the suitability of the staff training arrangements and delivery approaches, areas for improvement and scalability
- **readiness to be evaluated in a trial** – including what factors would support or hinder a successful randomised controlled trial to robustly evaluate the impacts of the CMC programme, and how it should be administered.

What activities will the evaluation involve for schools?

The evaluation involves six key activities in gathering data from the schools involved in the pilot. These are described below.

1. Baseline and end-point survey of students

We will administer an online survey with all of the students who are participating in the pilot. The first survey, which will help us to establish a 'baseline' position, will be administered in

September 2019 before students begin CMC lessons. It will take around 10 minutes to complete. It will include a range of Likert-style questions in which students will be asked to assess their confidence, enjoyment, knowledge and motivation to study maths.

We will then administer a 15 minute end-point survey at the conclusion of the pilot in December 2019. This will ask students a similar set of questions to the baseline, which will allow us to assess any changes over time. It will also incorporate questions exploring students' views on the maths teaching that has been received, and any challenges they might have faced.

2. Interviews with project managers/developers

We will conduct semi-structured telephone interviews with: two key representatives from NIFDI; the senior leader from MAT; the MAT programme manager (if different); and the two MAT local coaches. The interviews will explore: the programme content and delivery approach; engagement of schools and teachers and demand for the programme; success of recruitment to the pilot and the feasibility of recruitment for the main trial; training approaches; and any anticipated delivery challenges. Interviews with NIFDI and the programme managers will take place at the start and end of the pilot to provide context and understanding, while interviews with local coaches will take place in December 2019 so that they can comment on their involvement with schools during the pilot.

3. Observation of training and interviews with trainers

The evaluation team will observe the online training sessions on how to administer the programme placement test in June 2019 to gain an understanding of the assessment, its content/outcomes, how it is administered, teachers' feedback, and the threshold for student selection for the programme intervention.

We will also observe the two-day training event for the teachers who will be delivering the intervention in August 2019. This will ensure we gain an understanding of delivery expectations and capture any initial feedback from teachers. As part of this we will carry out interviews with two of the NIFDI coaches providing the training to gather their views of how the sessions went, what worked well and what enhancements are needed.

We will visit four schools in September 2019 to observe early programme delivery. We will use a structured observation schedule to observe at least one intervention class from Year 7, 8 or 9 in each school, which will explore whether the intervention is delivered as intended. As part of the visits to the four schools, we will observe one of the NIFDI visits to a school when they provide coaching to teachers and observe delivery. We will observe responses from staff and students, alongside facilitating a short discussion with teachers and students.

4. Case-study visits to schools

We will conduct case-study visits to four schools towards the end of the pilot in November/December 2019. The purpose of the visits is to explore participants' views on: the programme aims, content and delivery; student selection; the feasibility of programme implementation; level of fidelity and any adaptations; dosage and reach; who has delivered

the programme (e.g. a specialist/non-specialist/TA); perceptions of impact and pupil progress; and financial and in-kind costs incurred.

In each case-study school we will carry out in-depth, face-to-face semi-structured interviews with the following:

- **Head of Maths**, to gain a perspective on the ease and challenges of programme implementation including staffing, facilities, timetabling; perceived impact on participating and non-participating students; and financial and in-kind costs to the school
- **teacher delivering the programme**, to explore: views on programme content; confidence to deliver the programme; whether they have been able to deliver it as intended (and if not why not and challenges faced); and their perceptions on impact on pupils during the pilot and the potential longer-term impact of further delivery
- **up to three groups of 4-6 students participating in the programme from each of the year groups (Year 7, 8 and 9, if appropriate)**, to explore their attitudes towards maths and their views on the programme content and its impact on them.

We will also observe programme delivery to a Year 7, 8 or 9 class in each school to assess whether it is delivered as intended and to observe responses from staff and students.

5. Telephone interviews with the teachers delivering the programme in each of the remaining pilot schools

These interviews will also be undertaken in November/December 2019, and will explore the same themes as those covered with teachers as part of the case-study visits to schools.

6. Student endpoint assessments

In December 2019, we will administer a maths test to all participating students in eight of the 12 pilot schools. At the time of writing, our preferred test is Hodder Education's Progress in Understanding Mathematics KS3 (PUMA KS3), a standardised test with three levels (one per term) across each year of KS3, that takes a maximum of one hour to complete. The drivers in selecting this instrument include the published validity and psychometry, correlation with KS2 results, as well as the relative brevity of the test and ease of administration for teachers.

Should the intervention be scaled up at some future point and evaluated as a randomised controlled trial (RCT), it will be necessary to administer such a test in order to establish the impact of the intervention on students' maths attainment and understanding of key maths concepts. While the findings of this test will be of interest to the evaluation team, the small size of the pilot means that that these findings will only be indicative of the possible impacts of the intervention. Rather, the main purpose of administering this test as part of the pilot is to allow us to check the usability of the test for schools in terms of burden and cost, ease of administration as part of a trial, and whether it correlates well as a measure of the intervention.

What other activities will the evaluation involve?

Alongside the telephone and case study interviews with staff and students, the evaluation will utilise information collected by MAT and NIFDI delivery teams to monitor programme fidelity. This will include fidelity logs which capture lists of participating students, and their attendance at each maths session, as well as teacher and developer monitoring and evaluation data, which will be collected after every session.

When will I need to get involved?

1. Baseline and end-point surveys of students	<ul style="list-style-type: none"> September 2019: baseline survey for Year 7, 8 and 9 students December 2019: end-point survey for all students
2. Observation of training and delivery	<ul style="list-style-type: none"> June, August and September 2019
3. Complete fidelity logs	<ul style="list-style-type: none"> September-December 2019
4. Case-study visits to schools	<ul style="list-style-type: none"> November - December 2019
5. Telephone interviews with a teacher delivering the programme in each of the remaining pilot schools	<ul style="list-style-type: none"> November - December 2019
6. Student end-point assessments	<ul style="list-style-type: none"> December 2019

Who is NFER?

NFER is an independent research organisation with many years' experience of undertaking research and evaluation with schools. For more information please visit:

<http://www.nfer.ac.uk/>

Who can I contact for more information?

Jennie Harland, the Project Leader at NFER, is very happy to answer any questions you might have. Please contact her on 01904 567606 or at: j.harland@nfer.ac.uk

Thank you very much for your support with this evaluation.