Eedi

Evaluation Report

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The Education Endowment Foundation (EEF) is an independent grant-making charity dedicated to breaking the link between family income and educational achievement, ensuring that children from all backgrounds can fulfil their potential and make the most of their talents.

The EEF aims to raise the attainment of children facing disadvantage by:

- identifying promising educational innovations that address the needs of disadvantaged children in primary and secondary schools in England;
- evaluating these innovations to extend and secure the evidence on what works and can be made to work at scale; and
- encouraging schools, government, charities, and others to apply evidence and adopt innovations found to be effective.

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We can draw upon a team of over 400 associates, each of whom brings many years of experience in education, covering both schools and post-compulsory education, as well as roles in many of the supporting agencies and government departments. We are actively engaged with the latest educational developments both at a strategic level, through our research and evaluation projects for UK government, and at a practical level, through the experience of our wider team in all aspects of educational development and change.

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We work across sectors that include criminal justice, education, youth engagement and radicalisation, welfare reform, and social innovation.

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Executive summary

The project

Eedi is a maths homework-setting platform designed to facilitate teachers' ability to identify students' maths misconceptions through diagnostic multiple-choice questions. Each topic in a teacher's scheme of work has two associated ten-question assignments that are set as homework:, Quiz A is presented on the day that the topic is covered and Quiz B (similar paired questions) is presented three weeks later. Regular use of Eedi provides students with formative feedback with the aim of improving attainment in GCSE maths. The Eedi platform also aims to reduce teachers' homework-related workload.

The intervention ran for two years and targeted all students studying GCSE maths in Years 10 and 11 (aged 14–16). The Eedi platform was intended to be used twice a week for two years alongside the GCSE maths scheme of work. The Eedi homework is set by teachers and completed by students, and can be accessed by teachers, students, and their parents.

The delivery of Eedi started in September 2018 and ended in June 2020. The trial activities started in December 2017 and ended in June 2021, during which time 28,930 students in 158 schools took part. The efficacy trial combined an impact evaluation and an implementation and process evaluation. The process evaluation included the collection of several sources of qualitative data—namely teacher interviews, student focus groups, and free text comments made by teachers in a longitudinal survey.

The Eedi platform evolved from a free-to-access online sharing resource (Diagnostic Questions), developed by Craig Barton. The version of Eedi as evaluated in this trial is now known as Eedi School, distinct from Eedi Family (for parents and children).

This project and its evaluation were affected by the 2020 partial school closures caused by the Covid-19 pandemic, and the cancellation of GCSE examinations that year. As a result, the evaluators were not able to use GCSEs in order to estimate the impact of the project on maths attainment. It was not therefore possible to rate the security of impact estimates.

Key conclusions

Key conclusions
1. Due to Covid-19, the primary outcome for this evaluation was not collected and so no measure of impact on maths attainment is reported. Key conclusions are based on qualitative data from the implementation and process evaluation. There was some evidence that Eedi reduced teachers' homework-related workload as reported in approximately half of teachers' responses in school visits and survey questions. Teachers responding to the survey in intervention schools noted an average reduction in their workload of 28 minutes per week, compared with teachers responding in control schools.
2. Further exploratory analysis showed that students who were eligible for free school meals were less likely to start or complete an Eedi quiz compared with students who were not eligible. The parents of students who were eligible for free school meals were also less likely to log into the Eedi platform compared with parents of children who were not eligible.
3. Teachers did not set the Eedi homework quizzes as frequently as intended. Students were set an average of 25 quizzes in Year 10 and four quizzes in Year 11, compared with expected figures of approximately 80 quizzes in Year 10 and 52 in Year 11. The low dosage limited the ability of Eedi to deliver its intended benefit as a formative assessment tool.
4. Reports from teacher surveys and from students (in four of seven focus groups) suggested that students were guessing answers to their Eedi homework due to the difficulty of questions, the desire to complete homework quickly, and a lack of engagement. Teachers reported finding it useful when students completed the reasoning box to document their workings; however, students reported not using this feature.
5. The parental update function was enabled for 36% of students in Year 10 and 11% of students in Year 11. Of the teachers who responded to the survey, only 1% in Year 10 and 3% in Year 11 reported that they had noticed a major positive change in parental awareness or engagement with their child's maths learning; 43% of Year 10 teachers and 31% of Year 11 teachers who responded to the survey reported a minor positive change.

Additional findings

The majority of teachers (81% for Year 10; 69% for Year 11) who responded to the survey did not report a change in students' attainment in maths over and above what they may have expected from the cohort at this stage in the year. However, Covid-19 prevented students from sitting their maths GCSE in summer 2020, which prevented the impact evaluation from taking place. Therefore, it was not possible to provide causal analysis of the impact of Eedi on students' attainment in maths.

Eedi usage data is provided for the whole sample of students taking part in the trial, showing that the dose of implementation was much lower than anticipated. It is difficult to accurately determine the reasons for this as the process evaluation (the teacher survey and request for case study visits) also had a low level of compliance. The teacher survey suffered from significant non-response, differing appreciably among teachers in intervention schools compared with teachers in control schools. The survey asked teachers to record their maths homework-related workload in hours and minutes per week for a survey reference week. Therefore, while it has been possible to consider the impact of Eedi on teacher workload in this report, there are some significant limitations to this analysis.

64% of teachers who responded to the survey in Year 10 and 80% of those who responded in Year 11 reported that Eedi helped them identify student misconceptions in their maths homework. The survey data provided a more favourable picture of Eedi than the platform data. It is hypothesised that this is because the teachers from intervention schools who responded to the survey and case studies were more engaged with Eedi than the teachers who did not respond to evaluation activities.

Eedi sets two quizzes on the same topic three weeks apart. A comparison measured the difference between the proportion of correct answers and suggested a minimal improvement in the second quiz compared with the first (under 0.5 percentage points: substantially less than one quiz question).

Analysis was carried out to assess whether usage data from the Eedi platform varied by student or school characteristics, including whether a student spoke English as an additional language. Overall, results suggest that English being a second language potentially acts as a barrier to the use of the platform. For example, teachers in schools with higher proportion of EAL students were less likely to set assignments and the proportion of EAL students in a school was negatively associated with the number of assignments started and the number of assignments completed.

It is possible that implementation was impacted by oversaturation as approximately 60% of teachers in the control and intervention schools reported using other maths homework platforms (alongside Eedi, for those in the intervention schools). It is also important to note that Eedi is commercially available outside this trial and has a relatively large userbase (100,000 users, including students, cited on the Eedi website in July 2021). This suggests that teachers may be more likely to use Eedi if they specifically seek it out rather than because their school is taking part in a trial.

One Year 10 survey asked teachers who reported that Eedi had supported them in identifying a misconception to provide some insight into the action they took as a result. Follow-up responses showed that 21% of teachers reported providing feedback in the Eedi platform, whereas 69% addressed misconceptions in a subsequent lesson, and 13% provided individual learner feedback. This highlights that not all teacher feedback actions necessarily leave a digital footprint in the Eedi platform.

Cost

There is no fee for teachers or students to use Eedi but at a school level there are set-up fees for on-site training (£300) and for syncing Eedi with the school information management system Wonde, which acts as an intermediary between the schools and third parties who need to access school data (£100). If Wonde is not used by the school, Eedi ask for the management data in an alternative format and the Eedi team sync this data manually. These school-level costs do not vary depending on the number of students using Eedi per school. Parents are charged £3.99 per month to receive Eedi updates on their child's performance. If a child is eligible for free school meals, Eedi do not charge the parent for this service. The total cost per student per year is £40.94 over two years or £40.59 over three years.

Introduction

Background

This study sought to examine whether students' exposure to the Eedi formative question-setting platform and marking system for maths in secondary schools raised attainment in maths at GCSE. It also sought to understand whether teachers using Eedi for maths instruction in Years 10 and 11 had a reduced workload. The intervention is an online question-setting and diagnostic platform for instruction in maths at GCSE known as Eedi and developed by Eedi (http://www.eedi.com). Eedi has evolved from a free online sharing resource known as Diagnostic Questions, which hosted a bank of approximately 1,000 diagnostic questions produced by Craig Barton and teachers who submitted their own questions. Eedi took this content and developed it further into a class management system that teachers could use to implement diagnostic questions into their scheme of work and connect with parents.[1]

The evidence base associated with the Eedi platform

It is well established that formative assessment and feedback for students improves academic attainment (Kingston and Nash, 2011; Black and William, 2009) and that frequent feedback for teachers on their students' progress helps them to improve their teaching (Hattie, 2008; Fryer and Hiroyuhi, 2016). Previous EEF trials examining formative assessment interventions have found mixed results. For example, students in the Embedding Formative Assessment schools made the equivalent of two additional months' progress in their Attainment 8 GCSE score, using the standard EEF conversion from student scores to months' progress, but there was no evidence that Embedding Formative Assessment improved English or Maths GCSE attainment specifically (Speckesser et al., 2018).

Eedi uses diagnostic questions as its formative assessment mechanism and in doing so provides teachers with evidence of any common misunderstandings that may be held by the student who answered the questions. Each incorrect multiple-choice response is linked to a common misconception and teachers can see how their class responds across the options. The Best Evidence Science Teaching resources produced by the University of York Science Education Group propose that effective science teaching involves 'appropriately-sequenced steps for learning progression, diagnostic questions to reveal preconceptions and common misunderstandings followed by response activities to challenge misunderstandings and encourage conceptual development' (Best Evidence Science Teaching, 2016). Eedi's founder Craig Barton cites the work of Bjork (2011) and the Theory of Disuse in his rationale for the gap between Quiz A and Quiz B. He notes that this gap aims to increase the storage strength of memories by allowing them to fade before trying to retrieve them.

Eedi provides its formative assessment via an online platform. There is some evidence from the US that online maths homework increases seventh grade student achievement, with students who have lower prior attainment benefitting more than those who have higher prior attainment (Roschelle et al, 2016). In the UK, there is limited evidence of the impact on pupil attainment of the large number of online maths platforms that are available. Intelligent tutoring systems (such as Cognitive Tutor) have been found to successfully support maths learning by building cognitive models representing human knowledge in relation to maths and predicting the activities and experiences that will help students learn to achieve curricular goals (see Ritter et al., 2007 for more information).

An additional feature of Eedi is that it provides a parental update function. Studies that have examined the effects of improving the flow of information from schools to parents have shown a positive effect on attainment (Bergman and Chan, 2017; EEF, 2016). Digital formative assessment tools that facilitate this feedback, such as Eedi, can be beneficial for attainment, though it depends on how they are configured (Sung et al., 2016). The Texting Parent efficacy trial, also funded by the EEF, involved schools sending texts that informed parents about dates of upcoming tests, whether homework was submitted on time, and what their children were learning at school. The trial involved over 15,000 students in Years 7, 9, and 11 from 36 English secondary schools, with schools sending an average of 30 texts to each parent over one academic year. The evaluation found that students who had the intervention experienced about one month's additional progress in maths compared with other students, although overall the results for science and English were less favourable. They also found that the vast majority of parents were accepting of the programme. The Texting

[1]The evolution of Diagnostic Questions to Eedi is covered in an online video: https://www.youtube.com/watch?v=farj-M4w6dg

Parent trial did not find any statistically significant differences between students who were eligible for free school meals and those who were not (Miller et al., 2016).

Eedi also aims to reduce teacher workload. The EEF's review of marking noted that reform of marking policies was the highest workload-related priority for 53% of respondents to the government's Teacher Workload Challenge survey (Elliott et al., 2016; Department for Education, 2015). Eedi aims to minimize the time taken to deliver high-quality feedback at scale, tailored to help children learn and reveal what they need to learn and when (Eedi, 2021). This has the potential not only to increase attainment in the short term but also to improve teacher motivation and retention in the medium and long term. In 2019, the EEF identified several ways in which technology can pay a role in improving assessment and feedback. The guidance report highlights that technology goes beyond assessing whether or not students have understood what is being taught—it is important in terms of how feedback can provide students with the information they need to improve. It is argued that technology has the potential to improve the efficiency and speed of assessment and feedback, with positive implications for teacher workload.

Since the beginning of the trial, schools experienced an unprecedented shift to online teaching and learning, which arguably makes the findings of this research more pertinent than ever. Teachers were asked to adopt untested virtual delivery methods in response to the pandemic. Evidence from evaluations, such as this, is needed to inform teacher decisions regarding the extent to which these tools are used in subsequent academic years.

In the context of the Covid-19 pandemic, during which many schools have closed and students have studied from home, researchers and policymakers have started to look at the extent to which disadvantaged students are engaging with remote learning. The Nuffield Foundation (2020) reported that limited student access to IT is a significant challenge. Whilst the Department for Education provided some disadvantaged students with laptops, the Children's Commissioner (2021) reported that three in ten Year 10s were not provided with laptops during the pandemic, suggesting that support fell short of what was needed. Although Eedi can be completed on a phone, some students may prefer to use a laptop, particularly when using the reasoning box. Internet access is also important for using online platforms and within the context of the pandemic. To ensure all students have internet access, free mobile data allowances were provided to disadvantaged students until the end of the 2021 summer term (Department for Education, 2021).

Rationale for conducting the evaluation

The EEF's 2016 review of marking led them to commit £2m to building the evidence base around teachers' marking. This Eedi project was considered an interesting test of an alternative to time-consuming written marking. In addition, the programme used lessons from the successful EEF Texting Parents project to communicate to parents.

This rationale was based on the premise that formative feedback can positively impact on attainment, and there is a solid rationale for teachers having easy access to information about the misconceptions of their students. The EEF notes that finding programmes that help all teachers to implement the approach is challenging. Eedi has not been subject to a robust evaluation, but evaluations of a similar tool (used in lessons rather than homework) in the Netherlands found an impact of three months' additional progress on students' outcomes (Faber et al., 2017).

Integrated evaluation design

Prior to Covid-19, the evaluation sought to examine the impact of Eedi on students' maths attainment at GCSE and the extent to which variability in implementation affected the achievement of expected outcomes, but this was prevented by the cancellation of the GCSE maths examinations in summer 2020.

In lieu of the intended objective achievement measure, the integrated evaluation design combines an impact evaluation examining the impact of Eedi on teacher workload via a pragmatic cluster randomised controlled trial, and an implementation and process evaluation that considers several factors: how Eedi was implemented; what constitutes usual practice; the extent to which Eedi has changed the working environment and pedagogy of teachers in the intervention schools; and intervention school teachers' perceptions of how and why Eedi may be making a difference. The evaluation also considered the costs to schools of delivering Eedi.

The evaluation combines quantitative and qualitative methods to balance establishing a representative picture of the extent to which the intervention was implemented with achieving an in-depth understanding of how teachers and students experienced using Eedi. The design includes:

- a statistical analysis of teacher workload, provided by a teacher survey;

- an exploratory statistical analysis of Eedi platform data (which provided an overall picture of the number of assignments set by teachers, the number of assignments started and completed, the number of assignments corrected, and the number of parent logins per student by selected demographics, including eligibility for free school meals); and

- case study visits that included semi-structured interviews with teachers and focus group discussions with students, providing the opportunity to explore some of the themes arising from the survey responses in more detail.

Intervention

1. Brief name: Eedi (previously Diagnostic Questions).

2. Why (rationale/theory)?

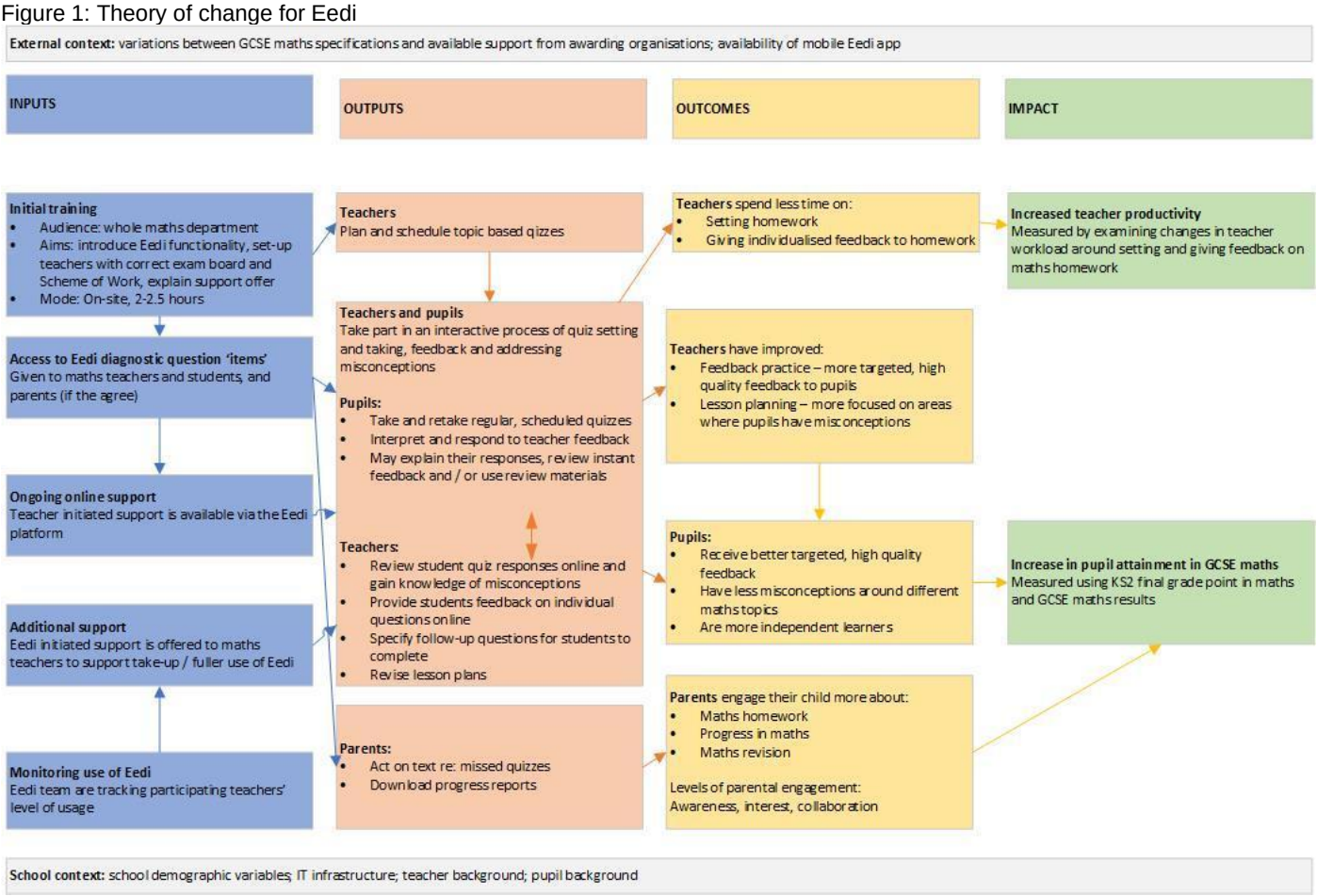
The intervention aims to improve attainment among Year 10 and 11 secondary school students in maths as measured at GCSE, as well as to reduce teacher workload. This will be achieved by providing better quality and faster feedback on maths homework for students, teachers, and parents.

Eedi aims to provide teachers with three benefits:

1. It gives them the ability to identify misconceptions by providing insight into why students have answered questions incorrectly. It does this by using diagnostic questions rather than a simple multiple-choice question that can only identify whether an answer is right or wrong.
2. It gives them the ability to distinguish performance from learning by setting follow-up quizzes automatically at a key point in the future.
3. It saves teachers time that they would ordinarily have spent marking homework.

These benefits are anticipated to translate into increased student attainment. The theory of change in Figure 1 captures the evaluation team's understanding of the programme theory and rationale for the intervention at the outset of the evaluation. This is based on the background information provided on the intervention before and during the project set-up process, and in the theory of change workshop undertaken by the evaluators with the Eedi team in December 2017. The inputs describe the core elements of the intervention (i.e. who is doing what to or with whom). The outputs might here be conceived as necessary, intermediary outcomes of the intervention and involve assumptions about the pre-conditions for the intervention to work as expected. The outcomes articulate the short- and medium-term positive changes the intervention is seeking to achieve in students, whereas the impact is about longer-term as well as socially important intended changes. Taken together, the outputs and impact text boxes explain the rationale for the intervention. Some of the Eedi features have developed over the duration of the trial.

Figure 1: Theory of change for Eedi



3. Who (recipients)? Students in Years 10 and 11 receive Eedi as part of their GCSE maths programme.

4. What (materials)? Teachers and students receive an Eedi account to be used online.

Schools assign formative assessment 'quizzes' aligned to their exam board's scheme of work. Eedi instantly populates a calendar of multiple-choice quizzes for the entire year. If they wish, teachers can manually adjust the ordering and scheduling of the quizzes. There are two quizzes per topic in the scheme of work.

Students complete quizzes each week according to the scheme of work set by their teacher. Each quiz comprises ten questions and each question has four multiple-choice answers. Using good quality distractor answers, each incorrect answer is designed to diagnose a specific 'misunderstanding'. Quizzes are marked through Eedi. Students are then prompted to review their answers with feedback targeting their specific misunderstanding.

Teachers do not have to mark quizzes, as Eedi marks them automatically. Teachers can review their class's scores on Eedi, identify common misunderstandings based on the percentage of students in their class selecting a specific incorrect answer for a given multiple-choice question, and if necessary, send additional feedback to all students making that mistake.

Parents can receive automated text messages about new quizzes, students not completing quizzes as required, or what topics are being covered in class. More detailed reports are available by logging in to the Eedi website. Schools typically held parental mobile numbers but given the arrival of GDPR, schools varied in the extent to which they asked parents to opt into the project.

The quizzes are produced by Craig Barton and the Eedi team, and include a large number of questions that teachers submitted to Craig Barton when Eedi was in its early stages and referred to as Diagnostic Questions.

5. What (procedures)? The programme involves training teachers to use Eedi with their maths classes. Catch-up training is offered in the second year of the implementation to accommodate changes of staffing. Each teacher is required to organise their scheme of work on Eedi.

6. Who (implementers)? Within each school there is an Eedi lead who coordinates the intervention and maths teachers who deliver the intervention to students. A team of trainers from Eedi deliver the maths teacher training.

7. How (mode of delivery)?

For a teacher to use Eedi, they typically attend a training session provided at their school by a trainer from Eedi. Following this, they set up their Year 10 scheme of work in Eedi. They also ensure the students all have an Eedi account and set up the parental function, which (depending on the school) may require asking parents to consent to using their contact phone number for this purpose.

The scheme of work is split into topics and for each topic Eedi provides two quizzes: Quiz A and Quiz B. Each quiz has ten questions. Quiz Bs are clones of Quiz As, but with different numbers and a different order of answers.

The teacher covers the maths topics in their scheme of work, in the order they are synced to Eedi. The first quiz (Quiz A) is assigned to students automatically following the teaching of that topic and students are expected to complete the quiz as soon as possible to allow for the immediate assessment of misconceptions. Teachers can monitor the students' results at a class and individual level and either provide feedback directly in Eedi or provide feedback in their subsequent lesson. The teacher can read the reasoning box and provide personalised feedback that the platform does not provide. Feedback that is provided outside the platform is not monitored.

For each topic, the second quiz (Quiz B) is assigned to students automatically three weeks later. Teachers monitor the results and either set feedback directly in Eedi or provide feedback in a subsequent lesson.

This process is repeated for each scheme of work topic for Year 10. At the beginning of Year 11, teachers set up their Year 11 scheme of work in Eedi. There is the option for teachers to attend refresher training. The teachers then set and review quizzes as in Year 10. Once the scheme of work is complete, teachers can use Eedi's revision functions in addition to the quizzes.

The parental monitoring function updates parents by text message on their child's Eedi performance. Students can identify areas of weakness by examining the topics where they answered incorrectly—these are presented in the dashboard within their view of the platform.

8. Where (setting)? Eedi is a homework tool so will be used outside the classroom.

9. When and how much (dosage)? Teachers were expected to set an average of two new topic quizzes per week for all Year 10 classes in 2018/2019 and Year 11 classes in 2019/2020, and reduce homework accordingly. It was assumed that the Eedi quiz would be used in place of the business-as-usual homework, not in addition to it. The two quizzes do not double count the follow-up quiz set automatically three weeks after the initial topic quiz.

Eedi contacted the project lead at the school on a bi-weekly basis to provide usage figures and offered support to those where usage was low. According to the memorandum of understanding, if this average fell below 1.25 quizzes per week, Eedi contacted the project lead at the school to discuss how usage could be increased.

The use of Eedi as a revision tool was not captured in the theory of change workshop or project set-up documentation. Furthermore, the trial ended on 20 March, meaning that the pre-exam period was omitted.

10. Tailoring: Eedi can be tailored by teachers to set the quizzes in line with their scheme of work. This means that teachers can cover topics in their preferred order, and they can change the order part way through the year.

11. How well (planned)? The delivery team monitored the use of Eedi across schools and contacted low use schools to offer support if required.

- Recruiting schools to take part was a challenge and overran.
- The use of an administrative database proved problematic for achieving the sampling frame for the teacher survey (see below for further details).
- Covid-19 prevented students from sitting their maths GCSE in summer 2020, which prevented the impact evaluation from taking place.

Evaluation objectives

The evaluation of the Eedi platform comprised both impact and process evaluations. The impact evaluation was originally designed to answer the following questions:

- What is the effect of Eedi on attainment in maths at GCSE?
- Does the effect of Eedi on maths vary according to whether students have ever qualified for free school meals?
- Does the effect of Eedi on maths vary by gender?
- What is the effect of Eedi on teacher workload?

Due to the cancellation of national examinations in response to the Covid-19 pandemic, students in the trial cohort did not sit GCSE examinations in summer 2020. It was these examinations from which attainment outcomes were to be derived. Instead, teacher-predicted grades replaced examination results. These predicted grades and the algorithmic approach originally proposed by the Department for Education were deemed unlikely to capture the effects of the Eedi formative assessment intervention, particularly following moderation. On the one hand, any gains in mathematical knowledge and the associated GCSE performance, such as those anticipated as a result of using Eedi, would be unanticipated by the algorithm and 'smoothed out' as it took into account school-level performance in previous years. On the other hand, participation in a trial such as Eedi may have also resulted in a self-fulfilling prophecy and the optimistic estimation of grades. Thus, the EEF concluded that a formal impact evaluation based on GCSE grade as the primary outcome was not feasible for this evaluation, or the other evaluations that used the same outcome variable.

It was possible, however, to collect survey data from some teachers in intervention and control schools, prior to the commencement of the intervention and at three further points in time. The survey asked teachers to record their maths homework-related workload in hours and minutes per week for a survey reference week. Therefore, it has been possible to consider the impact of Eedi on teacher workload in this report. As explained more fully below, there are nevertheless some significant limitations to the analysis.

The study's protocol can be found on the project page at the EEF's website along with both an initial and revised statistical analysis plan (SAP) for the project.[2] It should be noted that further changes to the planned analysis in response to challenges encountered upon receipt of the final data set have been required since the publication of the revised SAP. These updates are outlined here and in the 'Methods' section of this report.

As a result of the cancellation of summer GCSE examinations in 2020, the quantitative aspects of the evaluation presented in this report address the following questions:

1. What is the difference in the average number of hours per week spent on maths related non-classroom work among teachers in intervention group schools compared with teachers in control schools?
2. How does the number of quizzes ***set*** vary across the sample of children in schools allocated to the intervention by student gender, month of birth, and free school meals, as well as school-level covariates (derived from the 2017/2018 school census data): percentage of students with special educational needs (SEN), percentage of students with English as an additional language (EAL), percentage of students who receive free school meals (FSM), percentage of students achieving grade 5–9 in English and maths GCSE, and school type?
3. How does the number of quizzes ***started*** vary across the sample of children in schools allocated to the intervention by student gender, month of birth, and free school meals, as well as school-level covariates: percentage of SEN students, percentage of EAL students, percentage of FSM students, percentage of students achieving grade 5–9 in English and maths GCSE, and school type?
4. How does the number of quizzes ***completed*** vary across the sample of children in schools allocated to the intervention by student gender, month of birth, and free school meals, as well as school-level covariates:

[2] https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/diagnostic-questions/

percentage of SEN students, percentage of EAL students, percentage of FSM students, percentage of students achieving grade 5–9 in English and maths GCSE, and school type?

5. What is the average difference in the quiz scores for pairs of quizzes that test for the same subject knowledge at two points in time for a given student: right after teaching the lesson and three weeks later (while controlling for student gender, month of birth, and FSM, as well as school-level covariates: percentage of SEN students, percentage of EAL students, percentage of FSM students, percentage of students achieving grade 5–9 in English and maths GCSE, and school type)?
6. How does the number of parental logins to the Eedi system (as an indicator of parental engagement) vary by student gender, month of birth, and FSM, as well as by school-level covariates: percentage of SEN students, percentage of EAL students, percentage of FSM students, percentage of students achieving grade 5–9 in English and maths GCSE, and school type?

These questions differ in a number of respects to those set out in the revised SAP published in November 2020. Question 1 has been revised in the light of difficulties encountered with the survey data. In the revised SAP, it was proposed that the analysis would examine differences in average workload between teachers who *reported* using the Eedi platform, and those who did not, in the survey reference weeks. The survey variable that was designed to capture self-reported use of the platform was, on inspection of the data, felt to be unsuitable for this purpose. As a result, the target estimand has switched from estimation of the average effect of treatment on the treated (that is, on those who reported using the Eedi platform) to the average effect of intention to treat. In this study the average effect of intention to treat compares average workload among teachers in intervention schools where teachers could access Eedi, with that in control schools where teachers were unable to access the platform. The process of randomisation led to varying exposure to the offer of Eedi to teachers (intention to treat). As will be explained, however, it felt unwise to derive estimates of treatment effects from simple experimental contrasts across intervention and control group teachers. The analysis is based on survey data. Response rates varied considerably across intervention and control groups, and this was taken to imply an appreciable risk of selection bias. This perceived risk of bias led to the decision to analyse the survey data using quasi-experimental statistical methods often reserved for non-experimental analysis.

Questions 2–6 are also revised in relation to those initially set out in the revised SAP. It has proved impossible to match records from the Eedi system to the National Pupil Database (NPD) as was envisaged at the time the revised SAP was published. The Department for Education, after an extended application process, eventually rejected an application to link the Eedi system data to the NPD. Concerns were raised by the department that the study's information and withdrawal letters were not sufficiently compliant with the Information Commissioner's Office checklist for such documents, despite the fact that school recruitment occurred entirely prior to the General Data Protection Regulation (GDPR) coming into force. On this basis, the department refused to grant to access the data. This decision limits the analysis of take-up of Eedi by prior attainment.

The process evaluation, which was largely unaffected by Covid-19, addressed the following questions:

1. How was the intervention implemented? What were the enablers and barriers to implementation of the programme? Was implementing the programme feasible?
2. What constitutes 'usual practice' in the intervention and control schools, and did this change over the duration of the trial? Are control schools using similar interventions to Eedi that might be considered close substitutes for it?
3. To what extent has the programme changed the self-reported working environment and/or pedagogy of teachers in the intervention schools?
4. What are intervention school teachers' perceptions of how and why the programme is making a difference, if at all, and to what extent might this be different depending, for example, on student groups?
5. How and why did the implementation of the programme vary? To what extent did any variability affect the achievement of expected outcomes?
6. What are the costs to schools of delivering Eedi?

The evaluation protocol can be found here:
https://educationendowmentfoundation.org.uk/public/files/Projects/Evaluation_Protocols/EEDI_Protocol_2018.05.02_FINAL.pdf

The SAP can be found here:
https://educationendowmentfoundation.org.uk/public/files/Projects/EEF_QED_revised_SAP_Eedi_trial_November_2020.pdf

Ethics and trial registration

AlphaPlus and Manchester Metropolitan University had separate ethical clearance procedures that were invoked independently in the case of this study. In the case of Manchester Metropolitan University, ethical clearance was obtained from the Faculty of Arts and Humanities Research Ethic and Governance Committee on 14 February 2018 (see letter in Appendix 1).

Parents were able to withdraw their child from the project at any time, including before the project commenced, by notifying the evaluators via their school or via an online link (notifying Eedi). The data on individual students was retrieved, stored, and processed on the basis of schools' agreement to participate in this study. This includes the legal basis upon which records from this study will be linked to the NPD for each child whose parents have not withdrawn them from the study. A copy of the parental information sheet and withdrawal letter is provided in Appendix 2 and Appendix 3. The wording of the withdrawal letter has been cleared by representatives of the EEF to ensure it meets the requirements of the Department for Education for the linking of student record levels from the trial to the NPD.

A copy of the memorandum of understanding signed by schools, signalling their agreement to participate in the study, is provided in Appendix 4.

The study was registered at www.controlled-trials.com and was allocated ISRCTN 62362872.

Data protection

During the trial, data was collected on students' use of the Eedi platform. This included some socio-demographic information (for example FSM eligibility, which school provided to Eedi). The student data was not linked to the NPD.

Legal basis for processing

The trial commenced prior to the introduction of GDPR in May 2018. Under GDPR the legal basis for processing personal data for this research project is public interest. The data sharing was necessary for the parties to undertake a research project into the effectiveness of the Eedi platform aimed at students in Year 10 and Year 11. This project is in the public's interest as the results will help assess the performance of Eedi on student achievement and teacher workload. The Eedi platform is designed to deliver online maths homework assignments. The collection and sharing of data from students participating in the research project is necessary in order for the parties to evaluate the effectiveness and impact of Eedi on students' attainment and achievement in maths. In addition, the collection and sharing of student data and surveys from teachers participating in the project is necessary to assess the impact of Eedi on teacher workload. The collection of data describing parents' usage of and engagement with the homework platform will also be used in the evaluation.

Teachers completed surveys at up to four points (June and July 2018, December 2018, March 2019, and March 2020). This occurred through the secure Qualtrics platform. The survey was circulated to teachers via the trial lead within each school. It was circulated as a generic link and did not link to an individual teacher's name or email address. The survey data was accessed only by the evaluation team.

Data collected during case study visits was anonymised. Recordings were transferred to a secure SharePoint folder within 24 hours of collection and recordings on devices were deleted as soon as the transfer was made. The recordings specified a case study number, not the name of any individual school. Interviewers avoided using individual names during the discussions.

Data retention

Manchester Metropolitan University and AlphaPlus destroyed all personal data associated with this project during project close down.

The data sharing agreement between AlphaPlus, Manchester Metropolitan University, the EEF and Eedi can be found in Appendix 5 and includes information about the legal grounds for processing data.

Manchester Metropolitan University's data protection statement is provided in Appendix 6. AlphaPlus's Data Security Policy is provided in Appendix 7.

Project team

The delivery team is summarised in Table 1 and evaluation team summarised in Table 2

Table 1: Delivery Team

Name	Organisation	Role
Craig Barton	Eedi	Co-founder
Simon Woodhead	Eedi	Chief research officer and co-founder
Iris Hulls	Eedi	Head of Operations
Bibi Groot	Behavioural Insights Team	Support Eedi on recruitment and retention
Lal Chadeesingh	Behavioural Insights Team	Support Eedi on recruitment and retention

Table 2: Evaluation Team

Name	Organisation	Role
Andrew Boyle	AlphaPlus	Project Director
Dr Kathy Seymour	AlphaPlus	Led on the teacher workload element, including design and development of research instruments
Dr Hayley Limmer	AlphaPlus	Senior researcher at AlphaPlus—responsible for centre visits and working with AlphaPlus statisticians to carry out analysis of teacher workload element of project
Claire Dowland	AlphaPlus	Project Manager for project set-up
Dr Roger Murphy	AlphaPlus	Lead on ethics
Professor Stephen Morris	MMU	Co-principal investigator, responsible for overseeing randomisation, experimental analysis, and reporting
Dr Zsolt Kiss	ZK Analytics (MMU Research Associate)	Conducted all experimental statistical analyses as well as on treatment analysis and will also be responsible for reporting
Andrew Smith	MMU	Conducted the randomisation

Methods

Trial design

This study is a pragmatic cluster randomised controlled trial. 158 secondary schools in England were allocated at random, on a 1:1 basis, to intervention and control groups. In intervention schools, students entering Year 10 in September 2018, and their teachers, were able to use Eedi for two years. Students and teachers in control schools could not access the Eedi platform. Student attainment in maths GCSE was the study's primary outcome. Students in the focal cohort were due to sit their GCSEs in the summer of 2020. The Covid-19 pandemic led to English schools closing from the end of March 2020, with the exception of schooling for vulnerable children and the children of key workers. At the same time the cancellation of summer GCSE examinations was announced. As explained above, the predicted grades that replaced examination results were not suitable as a primary outcome and as a result, it was not possible to conduct the primary analysis as intended.

The initial evaluation design specified a secondary outcome. This was weekly maths-related teacher workload, specifically in relation to homework, self-reported by teachers in minutes and hours for a given reference week. The measure of teacher workload was obtained from surveys of teachers teaching maths to the focal student cohorts prior to randomisation, in December 2018, March 2019, and March 2020. Despite disruptions, the final survey administered to teachers within participating schools did go ahead. All three waves of post-intervention data collection were attempted. An analysis of this data is presented in this report. The analysis is considered exploratory because of the many limitations explained above and elsewhere in this report.

Table 3: Study design

Design		Cluster randomised controlled trial with survey sample estimates obtained via inverse probability weighted regression adjustment to compensate for differential non-response in control and intervention groups
Unit of analysis		Teacher
Stratification variable(s) (if applicable)		N/a
Outcome	Variable	Teacher workload in minutes per week.
	Measure (instrument, scale, source)	Total time spent in a reference week preparing, setting, marking, recording, and giving feedback related to maths homework (teacher self-report). Recorded in hours and minutes.
Baseline for outcome	Variable	Average teacher workload in minutes per week at the school level.
	Measure (instrument, scale, source)	Total time spent in a baseline reference week preparing, setting, marking, recording, and giving feedback related to maths homework (teacher self-report). Recorded in hours and minutes and aggregated to the school level.

In terms of the teacher survey data, a number of challenges were encountered. These challenges, together with the cancellation of national examinations in the summer of 2020, led to publication of a revised SAP in November 2020 that addressed the following issues:

- Among teachers in the intervention group there is evidence of appreciable levels of **non-adherence to the intervention**. Non-adherence varied between treatment and control schools as expected, consistent with randomisation to the platform, but it also varied between interventions schools and between teachers within the same intervention school.

- The achieved teacher survey sample was very unbalanced by intervention and control group, which, it was felt, was likely to reflect a **different loss to follow-up processes in the two arms** of the study (see Table 7 below). It was expected that the achieved sample of teachers in intervention and control schools would be roughly equivalent in the number. At Wave 1, however, intervention group teachers comprised 41% of the achieved sample whilst teachers from control schools made up 59%; at Wave 2, 37% of sample

respondents were from intervention schools and 63% from control schools; and finally, at Wave 3, 26% of sample respondents were from intervention schools and 74% from control schools.

- Due to the lack of sampling frame (described below), the teacher survey questionnaires were distributed by schools to the relevant teachers in the form of an email link to an online questionnaire. This means that no assessment can be made of the possible bias in teacher survey response, and that it is not possible to derive teacher-level survey non-response weights for analysis. These are important limitations. By way of partial mitigation, a school-level non-response weight to correct for the teacher observations missing from schools that did not participate in the survey is derived for the analysis.

In response to these challenges, the approach set out in the SAP published in November 2020 proceeded on the basis that estimated intervention effects needed to account for imbalances in survey response between teachers exposed to the intervention and those unexposed. Thus, the teacher survey data could not be analysed straightforwardly as if it had been generated on the basis of randomisation alone. Further still, in the revised SAP, the assumption was that the average effect of treatment on those treated (ATT) would be the target estimand. An estimate of ATT was to be obtained from an inverse-probability weighted regression estimator where the dependent variable was to be average workload in minutes per week across all survey waves at the teacher level. Another way of thinking about the approach outlined in the revised SAP of November 2020 was as 'per protocol' analysis—where the target of inference was the effect on teachers in schools that use the Eedi platform or that complied with experimental protocols (assuming that teachers in control schools could not access the intervention).

Revised approach to analysing teacher survey data

On receipt of the teacher survey data, having had an opportunity to examine the data in detail, and as a result of further reflection on the challenges faced, it became clear that analysis of the teacher survey data could not proceed exactly as set out in the revised SAP of November 2020. In this section, we set out the changes to the planned analysis.

The most important point of departure from the November 2020 SAP in the current analysis is the choice of estimand. The intention was to estimate the average effect of treatment on the treated, non-experimentally, directly from the data.[3] The intended approach could not be followed for two reasons:

1. The survey question that was intended to assess teacher's take-up of the platform received responses that were difficult to relate directly to what teachers said they had done during the reference week. In many cases, teachers reported some use of the platform but it was not clear whether this could be related to the working hours recorded for the survey reference week. Moreover, usage as recorded in the survey varied considerably across waves. Essentially, there was too much ambiguity in the responses to the question from which a measure of teacher take-up or exposure was to be derived. In making these points, it is important to note that we are using the teacher survey data in ways for which it was not initially designed.
2. The assumption of non-interference between sampled units within schools could not be maintained if the target estimand was ATT derived directly from data.[4] Thus, it became clearer that ATT could not be estimated without a significant risk of bias. In other words, it would be highly likely that the decision of a teacher within a school to use the platform would influence reported workloads for those not using the platform.

[3] This would be analogous to treating the sample as if it had been generated through a multisite non-randomised trial in which exposed and unexposed-groups were present within clusters. The approach ignores the initial cluster randomised design which breaks down because of both non-adherence and differential rates of sample response in the two arms of the trial. The problem with this strategy is the high likelihood of interference between teachers within schools such that the stable unit treatment value assumption does not hold (SUTVA) (Rubin, 1980). Switching the target estimand to the average effect of intention to treat addresses this problem. However, this switch creates problems of its own, the most significant of which is the diminished statistical power to detect a difference between samples of teachers in intervention and control schools at the 95% level. Furthermore, issues associated with the question wording (from which a measure of the use of the platform is derived) mean that the average effect of treatment on the treated cannot be recovered from the data.

[4] An alternative approach would have been to adjust the experimental invitation to treat estimates by compliance rates using either a Wald estimator or an instrumental-variables regression set up. As already described, however, no reliable measure that could be related directly to reported workload was available and so it was not possible to take this approach.

As a result of these considerations, the decision was taken to focus on the average effect of intention to treat (AITT), and to make this the target estimand.[5] In other words, the approach to estimation now exploits the initial randomisation more directly than the approach proposed in the revised SAP. Essentially the same estimator as that described in the SAP of November 2020 is used to obtain sample estimates of AITT (rather than ATT). A teacher is now defined as a member of the 'treated' group if they are in a school assigned to the intervention. Thus, the inverse probability weight is derived in order to balance the sample of teachers across the covariates in the survey sample by intervention and control groups. One drawback to this approach is that we do not take account of actual usage of the platform in the analysis. The sample estimates are for intention to treat rather than treatment on the treated. As explained, estimates of the average effect of treatment on the treated cannot be obtained because of the lack of a reliable measure of take-up of Eedi among teachers.

Four further changes to the analysis proposed in the revised SAP should also be mentioned.

First, a number of teacher respondents supplied estimates of their weekly workload that were excessive and were not deemed credible. As a result, cases with excessive values (workloads in excess of 900 minutes, 15 hours, or two additional working days per week) have been removed from the analytical sample. A judgement was made that these claims were implausible and such values, where they were observed, were only found at the upper extremes of the sample distribution, adding support to this conclusion. It should be noted that despite these steps there remain some large, reported workload observations (details are discussed further below).

Second, the sample estimate of the average effect of intention to treat of Eedi on teacher workload was to come from an inverse probability weighted regression model. One of the covariates to be used in the analyses was a prior measure of teacher workload from the baseline survey. From the baseline data an aggregate measure of workload at the school level for the relevant cohorts was to be derived. An aggregated measure was chosen due to problems linking baseline survey responses to responses at Waves 1 to 3 for individual teachers and due to missing data at baseline. It transpired that of the teachers who responded across Waves 1 to 3 of the survey, nearly 100 (out of a total of 730) came from schools that did not take part in the baseline survey, meaning that reliable estimates of average workload for the school, at baseline, are somewhat problematic. Taken together, these challenges have led to the decision to conduct the majority of the analysis of teacher workload without the inclusion of the baseline school-level average workload measure included as a covariate. Instead, a separate analysis is provided on a reduced sample including all covariates along with the baseline school-level average workload measure. The lack of a baseline or pre-intervention measure on the teacher-workload dependent variable is a significant limitation of this analysis.

Third, additional sensitivity analysis has been performed to examine the consequences for sample estimates of distribution of the derived teacher workload outcome measure.[6] As mentioned, this measure includes some high values. As an additional step, regression models where teacher workload is transformed into natural logarithms is presented.

Fourth, due to subsequent problems in linking records across waves and identifying individual teachers (this is due to having to resort to using email addresses as a unique identifier for survey respondents across waves), the number of unique sample responses available to the analysis is 730 cases rather than the 829 cases reported in the revised SAP.

[5] In this case, the average effect of intention to treat seeks to answer the question: what is the average effect on a teacher's workload of all teachers being offered access to the platform? For this we require an estimate of the average potential outcome across all teachers—first under the condition of having been offered use of the platform, and second the average potential outcome for all teachers under the condition of not being offered the platform. An estimate of the average effect of intention to treat is the difference in these two values. The switch from the average effect of treatment on the treated to the average effect of intention to treat is reflected in the changed definition of the weights applied to the sample for analysis.

[6] As will be shown, the distribution of teacher workload in the intervention school sample appears to be a mixture distribution potentially comprising two sub-distributions. In order to understand the nature of this distribution, further analysis of the outcome measure for teachers in intervention schools might be considered through, for example, fitting finite mixture models to the data (though it is worth noting that sample size would constrain such an analysis). For the purposes of reporting here, however, we consider the distributions in both arms of the trial to be close enough to normal to proceed as described.

Revised approach to analysing the take-up and usage of Eedi among the intervention sample

The SAP specified that the Eedi administrative data would be linked with NPD data so that an analysis of take-up and usage of the system within the intervention sample could be conducted using NPD variables as covariates. This was not possible following the Department for Education rejecting a request for access to the NPD. As a consequence, we were not able to control for students' prior attainment. However, it has been possible to control for gender, FSM, and month of birth by using data extracted from Eedi's systems (which are themselves linked to school management systems).

Additionally, the following deviations from the SAP are noted:

- The analysis of usage data: all analyses control for school-level characteristics drawn from the 2017/2018 school census data (these controls are described more fully below), even though such covariates were not originally specified. School-level data is included to ascertain if student-level effects actually act as proxies for school-level characteristics.

- The analysis assessing the differences between test quizzes specified in the SAP included controls for the amount and type of interaction with the platform between each pair of quizzes. This was not included in the analysis as the data was not available. Additionally, the SAP specifies the use of school size and deprivation as covariates. These are not included in the models. Deprivation is proxied by the proportion of FSM students in the school, while the school size is not believed to be relevant, and schools did not in any case vary appreciably by size to warrant inclusion in the models.

- The SAP specified that approximately 350 students were recorded to have used the platform during lockdown. Due to data duplication, this estimate was incorrect—109 students used the platform during lockdown. Due to the much-reduced sample sizes, analysis proceeds on the basis of descriptive statistics only.

Participant selection

The sample of schools for this trial was obtained from records held by Eedi, the EEF, and three major exam boards in England. From these records, schools were approached to take part in the trial. To be approached, schools had to be a non-selective secondary school and deemed not to be an extensive existing user of the Eedi platform. Schools considered for inclusion were those found to have 30 or fewer students who had accessed the Eedi platform and completed quizzes between September 2017 and February 2018, taking into account total school size. Of 734 school records obtained, 458 met these initial trial inclusion criteria.

All 458 schools were invited to book a telephone call with the Eedi team, during which the trial was explained and they were invited to join the study. A total of 287 telephone calls were held between the developers and schools from early spring 2018. Resulting from these calls, 190 schools signalled their intention to take part in the trial through signing a memorandum of understanding with the project team and evaluators.

Subsequent to signing the memorandum, 21 schools withdrew from the study for a variety of reasons and 11 failed to provide the required baseline data. As a result, 158 schools were randomised to intervention and control groups.

The trial followed a single cohort of students and their maths teachers throughout their maths GCSE course, beginning in Year 10 in September 2018 through to the closure of schools due to the pandemic in March 2020. Amongst participating schools, all students in the cohort were expected to take part in the trial, unless they or their parents decided to withdraw.

For the exploratory analysis presented in this report, the target study participants are teachers teaching maths to the focal cohorts of students in Year 10 (school year 2018/2019) and Year 11 (school year 2019/2020) in the 158 trial schools. From this initial sample, 149 schools distributed questionnaires to teachers.[7] Within this sample of schools and potential pool of respondent teachers, those taking part in the survey provided a measure of their self-reported maths-

[7] Please see the CONSORT diagram below for further details.

related homework workload, measured in hours and minutes per week, for a specified reference week at each survey wave.

Unfortunately, researchers were unable to obtain a sampling frame for teachers in range of the intervention in participating schools. As a result, participating schools were relied upon to distribute questionnaires to teachers. This was achieved through schools emailing a link to the questionnaire at baseline, that is prior to or shortly after randomisation, at December 2018, March 2019, and March 2020.

For the exploratory analysis reported here, that is further to the analysis of the teacher survey data (analysis in addition to that looking at teacher workloads) discussed thus far, participants are children studying maths GCSE in Years 10 and 11 over the period September 2018 to 20 March 2020 (when schools were shut in response to the Covid-19 pandemic) in intervention schools. This further analysis looks at various measures of student adherence in relation to the intervention.

Outcome measures

The outcome that is the focus of the main exploratory analysis described in this report is teacher workload, which was initially conceived of as a secondary outcome for the trial.

The original purpose of the secondary analysis was to examine whether teachers exposed to Eedi experienced a reduced workload pertaining to administering homework compared with those who were unexposed to Eedi and instead subject to 'business as usual' conditions. The analysis was to be conducted on an intention to treat basis comparing average workload among intervention group teachers with that recorded by control group teachers.

An online questionnaire was administered to teachers in control and intervention schools prior to commencement of the intervention (summer term 2018), and on three subsequent occasions, asking respondents teaching maths to the cohort of interest to report the number of hours and minutes in a reference week they spent on homework-related tasks. The survey does not attempt to map all maths-related activities but selects those most relevant to the Eedi platform:

- preparing maths homework;
- setting maths homework;
- marking maths homework;
- recording, chasing, and analysing maths homework;
- giving verbal feedback on maths homework to students;
- planning maths lessons; and
- communicating with parents and carers regarding maths performance.

These were selected following a pilot phase of the survey, during which the evaluators considered recording the time and location of each activity similar to the Teacher Workload Survey (Department for Education, 2017a).

A copy of the questionnaire is available in Appendix 8. Reported workload was used to derive the dependent variable used as a measure of teacher workload in the analysis. The outcome is constructed from the data by adding up the amount of time spent on each of the tasks set out above to provide a measure that is referred to as 'total workload' in a reference week measured in minutes.

As mentioned, the survey questionnaire was administered at baseline to Year 10 and 11 teachers during the summer of 2018. From this survey it was hoped that a pre-intervention workload measure might be obtained for individual teachers. Because so few teachers supplied an observation on workload at Waves 1 to 3 and at the baseline, such a covariate (were it to be derived) would have unacceptably high levels of missingness. As a result, the baseline observations of workload among Year 10 and 11 teachers are aggregated to the school level and used as a school-level workload covariate. However, as explained, the resultant derived variable remains problematic and is therefore only used in a single specification in order to examine whether results were sensitive to its inclusion regardless of its ultimate reliability.

In addition to the outcome measure, a number of teacher-level covariates available for statistical adjustment are collected through the survey data. The following covariates are available—measures that we can be relatively sure are

exogenous to the intervention but are likely to be associated with take-up of the Eedi platform and correlated with workload:

- total years' teaching experience;
- years worked in the current school;
- years worked in current role;
- role in school (leadership versus classroom teachers versus other);
- whether a newly qualified teacher;
- whether a maths specialist teacher;
- working hours: full time or part time; and
- number of year groups taught (from Year 7 to Year 11).

There were several changes in the covariates included in the analyses compared with that described in the revised SAP:

- The 'use of similar platforms' variable was not included in the analysis because the question wording suggests teachers were being asked about their post-randomisation use of online maths platforms. The questions asked: 'Do you currently or have you previously used an online maths homework platform…?' This wording makes the responses to the question potentially endogenous to the treatment.
- The teacher's gender was not included as it was not captured in Wave 2[8] and its use would have meant removing teachers who only took part in Wave 2, decreasing the sample size by 167.
- In addition to the variables included in the SAP, we included the number of sets taught by the teacher to better proxy workload.

Further to these variables, school-level covariates from the school census are used as covariates in these analyses. Again, it is hypothesised that these covariates are associated with teacher workload and whether a teacher reports using the Eedi platform:

- percentage of students achieving grades 5–9 in maths and English GCSE in 2018;
- percentage of students qualifying for free school meals in 2018;
- school size in 2018;
- student/teacher ratio in 2018; and
- school type (academy, community school, foundation school, voluntary school).

There were several changes compared to the SAP. In addition to the variables listed above, we also included:

- percentage of girls in school;
- percentage of SEN students; and
- percentage of EAL students.

[8] It was included in Wave 3 of the survey but not Wave 2 in an attempt to avoid collecting personal data from teachers on numerous occasions.

Sample size

Table 4: Minimum detectable effect sizes at protocol and analysis

		Protocol	Analysis
MDES		0.20	0.28
Pre-test/post-test correlations	Level 1 (Teacher)	0.40	0.40
	Level 2 (School)	n/a	n/a
Intracluster correlations (ICCs)	Level 2 (School)	0.2	0.2
Alpha		0.05	0.05
Power		0.8	0.8
One-sided or two-sided?		Two	Two
Average cluster size		5.5	5.1
Number of schools	Intervention	70	63
	Control	79	71
	Total	149	134
Number of teachers	Intervention	323	272
	Control	501	417
	Total	824	689

The sample size for the study, as originally conceived, was determined in order that a minimally important difference of ES = 0.17σ would be detectable with Type I and II errors of 5% and 20% respectively. This was on the basis that student attainment in the form of GCSE grades in maths would form the primary outcomes. Further assumptions made in the initial sample size calculations were: sample estimates of the average treatment effect were to be obtained from a three-level hierarchical linear model containing prior attainment as a covariate; and the inclusion of prior attainment as a covariate would explain around half the residual variance in the outcome at the student level and around a quarter of the between-school variance in examination performance. Assumptions for the values used for intra-class correlation coefficients at levels 2 and 3 were obtained from previous similar EEF-funded trials. These assumptions and a minimally important difference of 0.17σ were consistent with a sample of 180 schools, and around 30,000 students in total.

The target of recruiting 180 schools was not achieved. As noted above, 158 schools were eventually randomised to intervention and control groups. This resulted in a sample of 28,930 students across both arms of the trial and a minimum detectable effect size of 0.18σ for the primary outcome (GCSE maths attainment).

A revised SAP was issued in November 2020, after it became clear that the student attainment primary outcome would no longer be available. The decision was made to conduct exploratory analysis only and to focus attention on teacher workload as an outcome measure. (Table 9 below examines the teacher survey questionnaires received by schools and by intervention and control groups.) The revised SAP contained sample size calculations based on teacher survey questionnaires that had been returned at that point in time before being checked for completeness and missing data. 824 questionnaires appeared to be available for analysis prior to cleaning the data, received from teachers in around 149 schools (see Table 4). These sample numbers equated to a minimum detectable effect size of approximately 0.20σ for a teacher workload outcome. This calculation assumes an individual-level analysis with treatment exposure varying within schools and that the estimand is the average effect of treatment on the treated.

As described in the following pages of this report, the final analytical sample subsequent data cleaning comprised of 689 teacher observations drawn from 134 schools. The estimand is now the average effect of intention to treat. This means that although some of the assumptions made in the calculation of the minimum detectable effect size in the revised SAP of November remain broadly similar, the estimand is now different. Because of the focus on the average effect of intention to treat, we go back to incorporating randomisation at the cluster level into the calculation. This reduces power and increases the minimum detectable effect associated with the analytical sample. Based on an achieved sample of n = 689 across 134 schools, the minimum detectable effect size for the achieved analytical sample is approximately 0.28σ for teacher workload. This calculation is derived from the programme PowerUp for R-studio.

Randomisation

Schools were allocated to intervention and control conditions on a 1:1 basis in SPSS v24 statistical software. Randomisation was carried out separately in three batches in order that training in intervention schools could commence prior to recruitment of all 158 schools being confirmed. The batches comprised 93, 54, and 11 schools respectively.

Randomisation was carried out by an independent researcher from the Department of Sociology at Manchester Metropolitan University who had no further role in the study and was ‘blind’ as to the identity of schools. Randomisation was stratified by region and batch.

Stratification by region was justified on the basis that training schools in the use of Eedi was conducted by teams working regionally. For pragmatic reasons, it was useful for the number of schools requiring training not to vary too widely from region to region.

Details of the schools that signed a memorandum of understanding were sent to Manchester Metropolitan University by Eedi. Subsequent to this, the researcher followed the procedures outlined here for each batch of schools:

1. Schools were arranged into strata based on region of England.
2. The researcher selected a six-digit random number seed to be stored in the SPSS programme, and for each school drew a random number from a 0–1000 uniform distribution.
3. Schools were arranged in each stratum in ascending order based on the random number.
4. In strata that had an odd number of schools, the school with the largest random number was removed from the stratum and set aside. Each stratum therefore contained an even number of schools.
5. Within each stratum, the remaining schools were divided in half on the basis of their random number, with schools in the lower half of the distribution assigned to the intervention, and those in the upper half to control.
6. The schools removed from the strata at step 4 were assembled and a new six-digit random number seed selected and stored in the SPSS programme. Each of these schools was assigned a new random number from a 0–1000 uniform distribution and arranged in ascending order.
7. The remaining schools were then divided on the basis of the second random number draw, with the lower half assigned to intervention (plus one in batch 2 as there was an odd number) and the upper half (plus one in batch 3 as there was an odd number) to control.

The SPSS syntax used to perform randomisation can be found in Appendix 9.

Statistical analysis

The statistical analysis presented in this report focuses on two aspects of the Eedi trial: first, the effect of the offer of Eedi to teachers on their reported workloads; and second, the factors associated with take-up of Eedi among students in intervention schools.

The effect of the offer of Eedi on teacher workloads

As the numbers in Table 9 below reveal, the absolute size of the achieved teacher samples by intervention and control group are quite unequal, suggesting an appreciable risk of bias in any simple experimental comparisons between the two groups. As a result, it is assumed that steps are required in the analysis to address potential bias.

The 'Trial design' section of this report explained that the estimand for this analysis is the average effect of intention to treat of Eedi on workloads. To obtain such an estimate, where bias is suspected, an inverse probability weighted regression estimator (with full treatment by covariate interaction terms) was chosen as most appropriate. The estimator is used to correct for imbalances in the teacher samples across intervention and control arms of the trial. The estimator is doubly robust to misspecification (Schafer and Kang, 2008). In crude terms, it provides two routes through which to correct for biases: first through weighting on an inverse probability weight (or more precisely, the probability that a teacher observation came from a teacher in a school assigned to the intervention); and second, through the inclusion of a full set of covariates[9] in a treatment effects regression model in which teacher workload is the dependent variable. This regression model is estimated on the achieved sample data weighted by the inverse probability weight.

Deriving weights for use in regression adjustment for treatment effects

As mentioned above, the exploratory impact analysis described in this report aims to provide estimates of the average effect of intention to treat of Eedi on teacher workload. More precisely, the target estimand is average teacher workload *as if all* teachers in the *achieved* sample were in schools assigned to the intervention (and had access to Eedi) minus average teacher workloads *as if all* teachers in the achieved sample were in schools assigned to control (and were prevented from accessing the platform). A sample estimate of this quantity is obtained from an inverse probability weighted regression estimator, which involves making a statistically adjusted comparison of the average workload for teachers *observed* in intervention schools with average workload for teachers *observed* in control schools.

The inverse probability weight for use in the analysis is a combination of two weights: the propensity score and a separate weight that corrects for non-response into the teacher sample at the school level. The probability that a school takes part in the survey, through distributing questionnaires to teachers, is modelled using a logistic regression model where a number of school characteristics are included as covariates. From the model a conditional probability of school response is obtained, s_i for school i. A non-response weight r_i is then constructed through taking the inverse of this probability such that $r_i = 1/s_i$. This weight, when applied to the data, weights-up the influence of teacher observations from schools that have low response probabilities relative to those from schools with higher response probabilities.

The second component of the weight is derived from the propensity score or more accurately, the predicted probability that a sampled teacher is from an intervention school—written p_{ij}. If the variable T_i takes the value '1' where school i is assigned to the intervention and '0' where school i is assigned to control, the composite weight ω_{ij} that combines both r_i and p_{ij} is defined as follows (Morgan and Winship, 2015) for T_i = 1:

$$\omega_{ij} = r_i \times \frac{1}{p_{ij}}$$

And for teachers in schools assigned to control where T_i = 0:

[9] These covariates either relate to periods of time prior to randomisation, or are time invariant.

$$\omega_{ij} = r_i \times \frac{1}{(1 - p_{ij})}$$

As mentioned, the quantity p_{ij} is the conditional probability that teacher j in school i is in a school assigned to the intervention group and thereby able to use the Eedi platform in their work.[10] For teachers in intervention schools with a high inverse probability weight, their influence in the data is weighted-down relative to those with a low inverse probability weight, whilst the reverse is the case for teachers in control schools. Thus, the application of weight derived from the propensity scores aims to draw the intervention and control school teacher samples into balance on the measured covariates such that more valid comparisons of teacher workload can be made between them. The propensity score is obtained from an individual teacher level logistic regression model, where the dependent variable is equal to 1 if teacher j is found in an intervention school, and 0 otherwise, with both individual-level and school-level variables discussed in the previous section included as covariates.[11] It should be noted, however, that the teacher questionnaires were designed in the context of what was originally an experimental study and not with the modelling of selection into the intervention group in mind. Therefore, the available covariates that can be derived from questionnaire data are likely to be less than optimal, at least theoretically, in terms of correcting for imbalances. Given that we have only anecdotal evidence of the factors that might be driving take-up of the Eedi platform and school-level non-response, we start from the position of including all the available teacher-level covariates mentioned above in the analysis.[12] In terms of covariates extracted from the school census (2018), for a time period prior to randomisation, these attempt to capture both the prior performance of the school in national maths examinations, the size and type of school, and the level of deprivation. We hypothesise that prior attainment is likely to be associated with teacher workload and survey response, as might levels of deprivation.

Estimation of inverse probability weights

A first run of the propensity score equation included the full set of individual teacher and school-level covariates as main effects. The balance achieved through weighting the raw analysis sample by the inverse probability weights from this initial run was assessed through calculating the standardised mean differences by intervention and control group for each covariate subsequent to weighting (Morgan and Winship, 2015) (see Table 8a below). These mean standardised differences were assessed relative to those derived from covariate comparisons based on the unweighted analytical sample data, and from subsequent standardised mean differences derived by weighting the analytical sample file with weights derived from a range of further propensity score equations. In these further equations, covariates were entered into the models as (1) interaction terms; (2) interaction terms excluding covariates that were relatively well balanced in the raw analytical sample file (that is where d >= 0.10); (3) second order polynomial terms for each continuous covariate with the full set of covariates; and (4) second order polynomial terms for each continuous covariate, excluding covariates that were relatively well balanced in the raw analytical sample file. The performance of each specification was also assessed visually through inspecting their respective common support properties. An iterative process of varying the specification of the propensity score equation and assessing the balancing properties of the resultant propensity scores resulted in a judgement that models 1 to 4 described above achieved little by way of improved balance relative to the initial main-effects-only model. As a result, the weights used in the analyses described in the following sections are those derived from the initial run of the propensity score equation.

Analytical model for the exploratory impact analysis

A sample estimate of the average effect of intention to treat of Eedi on teacher workload is obtained from an inverse probability weighted regression model. The regression model that is fitted to the weighted data is as follows:

$$Y_{ij} = \beta_0 + \beta_1 T_i + \beta_2^T X^T + \beta_3^T T_{ij} X^T + \varepsilon_{ij}$$

[10] In practice the weight used in the analysis is slightly different to that described in this section, though the implications for the analysis turn out to be negligible. The treatment effects reported are derived from analysis run using Stata v16 statistical software and it's treatment effects suite of commands. The weight applied in this command turns out to be the stabilised weight pTpijor 1-pT)(1-pij depending on group assignment, where pT is the marginal probability that a sample member is in an intervention school (Austin & Stuart, 2015). In past iterations of the commend help files this point was not entirely clear. See https://twitter.com/causalinf/status/1232767512548446208 for a discussion of this issue.

[11] The logistic regression models were estimated in the R statistical analysis package.

[12] Note Austin & Stuart (2015) suggest that it is not appropriate to use statistical tests in the analytic sample in order to identify covariates for inclusion in the estimation of propensity scores. This is due to the possibility of low statistical power in attempting to identify important covariates and that further the objective is to achieve balance in the sample not to make inferences to the population.

Where Y_{ij} is average hours per week for teacher j in school ji; T_i is set to equal one if teacher j is from an intervention school and zero otherwise; and X^T are teacher and school level covariates as described above. The specification includes full set of treatment by covariate interactions. Here β_1, β_2^T and β_3^T are vectors of coefficients. The estimated treatment effect is obtained from the regression by calculating the predict values for intervention and control groups whilst averaging or integrating over the other covariates. Estimates are obtained from fitting the model using the '`teffects ipwra`' command in Stata statistical software version 16. Confidence intervals are derived using robust standard errors that also take account of clustering of teacher observations by school. The parameter for the effect size is as follows, where Δ is the sample estimate obtained from the inverse probability weight regression above and S the unconditional within group pooled standard deviation for the outcome:

$$ES = \frac{\Delta}{S}$$

Estimates of the effect size and its 95% confidence interval, in a departure from the approach set out in the revised SAP, are obtained through the Stata v16 effect size calculator `esizei` specifying the `hedgesg` sub-command.

The main analysis rests on a number of assumptions: (1) that the Xs include all potential confounders; (2) that the relationship between the potential outcomes and covariates in models for the propensity scores and non-response weights are correctly specified in addition to including all confounders; and (3) that each teacher has a non-zero probability of Eedi platform use. In our judgement it is unlikely that all possible confounds are accounted for and therefore the estimates provided below are free from bias. One of the biggest challenges was the difficulty of deriving a baseline measure of workload from the teacher survey data. Due to sample attrition, it proved impossible to control for prior or baseline workload for individual teachers in our sample in estimating the effect of Eedi on post-exposure workload. An attempt was made to construct an aggregate measure of pre-intervention workload at the school level through aggregating observations on workload obtained at the baseline for teachers who did respond to the baseline survey and include this in our analysis. Our judgement is that this did not work very well due to the level of missing data. Pre-exposure differences in workload between those teachers who responded to the sample in intervention and control schools cannot therefore be ruled out. The absence of a pre-exposure measure on workload affects both adjustment for confounding in the multiple regression analysis and in the estimation of propensity score weights. These issues are discussed further below. Due to the design of this study initially taking the form of a randomised controlled trial, it does seem reasonable to assume that each teacher in the sample had an initial non-zero probability of exposure to the offer of Eedi.

Descriptive and other subsidiary analysis

In order to provide adequate context and to aid in the interpretation of results, a range of analyses describing the sample are undertaken. First, the absolute size of the sample by teacher and schools, prior to trimming extreme values (the raw data), prior to removing cases that did not supply observations on all the required covariates (except for the baseline school-level measure of teacher workload) (the trimmed sample), and the final analysis sample are displayed (the analytical sample). The means, medians, and standard deviations for the teacher workload measure are examined for the sample as a whole and in each of the trial arms, for the 'raw', 'trimmed', and 'analytical' samples.

As already mentioned, an analysis is also provided that explores the consequences of using the inverse probability weights. For each covariate used in the analysis, the difference in its average values by intervention and control arm in the analytical sample are reported both in absolute terms and as a standardised difference in means. These values are compared with those obtained making the same comparisons but on the analytical sample weighted by the inverse probability weights. The purpose of these analyses is to examine the extent to which the inverse probability weight when applied to the data reduces imbalances across intervention and control samples of teachers in the measured covariates.

Subsequent to presenting the results of the analyses described thus far, a series of regression models are estimated as a means of providing sensitivity checks on the analytical sample file:

1. A simple bivariate regression model with teacher workload as the dependent variable and a school dummy variable indicating whether the teacher concerned was from an intervention or control school.
2. The same model as (1) is estimated where the analytical sample is weighted using the final inverse probability weight.

3. A regression model with teacher workload as the dependent variable but including the full set of available covariates (but without the school-level baseline workload measure) and full treatment by covariate interactions but without weighting by the inverse probability weight.
4. The same model as (3) but where the analytical sample is weighted by the inverse probability weight. For this model we present an estimated effect size and 95% confidence interval as this is our preferred specification.
5. The same model as (3) but where the dependent variable—teacher workload—is entered into the model in natural logarithms in order to test whether results are sensitive to distributional assumptions (normality/linearity) in the main model.
6. For a reduced analytical sample, a regression model is estimated containing the full set of available covariates including observations on the school-level baseline workload measure, with treatment by covariate interactions, weighted by the inverse probability weight.

These analyses provide some assessment of the consequences of the chosen estimator and the decision made regarding the derivation of the analytical sample.

Three further analyses based on model (3) above are conducted on the analytical sample. The first has inverse probability weights capped at the 99th and 1st percentiles and the second has inverse probability weights capped at the 95th and 5th percentiles. These analyses examine the extent to which results are robust to relatively extreme weights—though there is little *a priori* evidence for problematic weights of this nature and due to initial randomisation we would not expect this to be a substantial problem. Finally, a third analysis is presented in which model (3) is re-estimated on a sample in which common support on the propensity score is enforced. Again, given that the data was derived from a trial, common support is unlikely to exist to any meaningful extent.

Checks for the possible effects of hidden confounders

One of the central assumptions that underpins the analysis is that we have a set of covariates that enables us to estimate the correct propensity scores and therefore the correct inverse probability weights. Thus the extent to which the proposed analysis produces unbiased estimates can be undermined, among other things, by the existence of some unmeasured or hidden confounder, which we refer to as U. Rosenbaum (1986, 2017) provides techniques to assess the extent to which a hidden confounder may, if it could be incorporated into the analysis, change the results. West et al. (2014) provide a summary of practical guidance in terms of conducting such an analysis drawing on earlier work from Hong (2004).

We assume that a hidden covariate is unaccounted for in our analysis that has a standardised mean difference between intervention and control groups in the unweighted sample equal to the largest difference observed among the measured covariates in Table 8a. This standardised mean difference is re-scaled by dividing by $\sqrt{2}$. This is necessary due to a scaling problem that arises because we do not adjust for the actual variance for the difference in the two means but instead use an estimate based on the variances within the two groups (West et al., 2014). Rosenbaum (1986) suggests that this re-scaling is required in sensitivity analysis. Furthermore, the analysis requires us to make an assumption about the correlation γ between the supposed hidden confound U and the outcome. Following Hong (2004), a value for γ is obtained through selecting the largest partial standardised correlational coefficient between observed covariates and the outcome. From our preferred specification of the inverse probability weighted regression estimator, we obtain an estimate of the average effect of intention to treat as an effect size $\widehat{ES}$. Following West et al. (2014), the quantities for U, γ, and $\widehat{ES}$ are entered into the following equation:

$$ES^* = \widehat{ES} - \gamma\left(\frac{d_U}{\sqrt{2}}\right)$$

Where d_U is standardised mean difference for the hidden covariate U. The quantity ES^* represents the effect size that would have been obtained had the hidden confound U been included in the analysis. The degree to which ES^* differs from $\widehat{ES}$ provides a sense of how sensitive results are to hidden confounds that possess plausible statistical values.

Analysis of Eedi administrative data to examine take-up and quiz performance

These analyses were carried out using data extracted by Eedi from their operational database. This was originally made available to the research team as part of the process evaluation. The data extract included information on the students

that used the Eedi platform over the course of the trial, including their school and class, FSM status, gender, and date of birth.

The following dependent variables were extracted from the Eedi administrative systems for exploratory analysis:

- Model 1: The number of assignments set by teachers.
- Model 2: The number of assignments started by each student.
- Model 3: The number of assignments completed by each student.
- Model 4: The number of mistakes corrected by each student.
- Model 5: The number of logins by parents by each student.

For each of these dependent variables, analyses were carried out using regression models that included the following student-level covariates: gender, FSM (past six years), and month of birth, along with fixed effects for class membership.

Additionally, a second set of models that also included school-level covariates were implemented. The following covariates were included pertaining to the 2017/2018 school year: percentage SEN, percentage FSM, percentage EAL, percentage grades 5–9 in maths and English GCSE, and school type.

Different regression models are used based on the distribution of the dependent variable. As such:

- Model 1 was estimated using a two-part model. This was to enable us to account for the large number of zeros present in the data, which co-occur with a near normal distribution of the positive values in the data. A two-part model is a model which accounts for dependent variables that are a combination of continuous response and a mass of observations at zero (Belotti et al., 2015; Deb et al., 2017). The expected mean can be written as the product of the expectations from the two parts of the model (Belotti et al., 2015):

$$E(x) = Pr\ Pr\ (x) \times E(y > 0, x)$$

For the second part, an OLS regression model for a continuous outcome was used, while the first part was estimated using a logit link function. The error terms in both parts of the model need not be independent for consistent estimates of parameters, and the covariates x are the same in both models. Marginal effects that combine both parts of the model are produced. The analysis will be implemented using the Stata programme 'twopm'.

- Models 2 to 5, due to response variables taking the form of counts, are to be estimated using negative binomial regression. Marginal effects are calculated and reported. For example, in Model 2, marginal effects quantify the effect of a one unit change in each independent variable on the number of assignments started by students. A value of 1 would indicate that, on average, if an independent variable increases by one unit, students would start one additional assessment.

Analysis of test pairs

The Eedi platform incorporates functionality that allows for two quizzes to be set on the same area of subject knowledge consecutively with remedial actions set by teachers between quizzes. The first quiz (test A) is set right after teaching the lesson and the second quiz (test B) is set approximately three weeks later. In the weeks between the two tests, students can receive feedback and homework, and parents can be notified.

The aim of this analysis was to examine whether the number of correctly answered questions increases in test B compared with test A and whether there are any differences between students based on the covariates mentioned in the previous analysis. From this we might infer how far teaching responds to misunderstandings in test A and thereby an improvement in students' performance is observed in test B.

The developer provided granular data that included the results of all quizzes taken by all students in the treatment group over the course of the trial. To be able to carry out analyses, the data is first reshaped and key variables derived. After data cleaning, matching, and deduplication, 51,556 quiz pairs were identified. It was not possible to match all quizzes

present in the raw data because some quizzes do not have a counterpart that measures the same area and topic. 19,249 test As were not matched to a counterpart test B and 11,504 test Bs were not matched with a counterpart test A. Regression analysis (see Table 16 for further details) was carried out to determine whether there are any differences between students whose quizzes were analysed versus those whose were not included. This indicates the extent to which results of the analysis are affected by selection or collider bias, at least in terms of observables. The results are displayed in Table 16 and suggest that matching test pairs for boys and students on FSM was less successful.

Once the quiz pairs were identified, the difference between the proportion of correct answers in test B compared with test A was calculated. A small number of quiz pairs (1,151) were removed, where the total number of items on the two quizzes differed. In addition, quiz pairs where the time between the two quizzes was less or more than 21 days +/- 2 days (1,798 pairs) were removed.

Multi-level linear regression models with autoregressive model (AR1) disturbances with the proportion of correct answers to test B as the dependent variable and the proportion of correct answers to test A along with a set of covariates were estimated on the resulting data. The unit of analysis was the test pair. These test pairs were clustered within students, who in turn were clustered within classes, and classes were clustered within schools. Covariates included students' gender, FSM status (past six years), and month of birth. School-level characteristics were also included: percentage SEN, percentage FSM, percentage EAL, percentage grades 5–9 in maths and English GCSE, and school type.

Analysis of Eedi usage during the Covid-19 lockdown

There are 109 students (in 15 schools) from the intervention group who have continued to use the Eedi platform during the Covid-19 lockdown (after 21 March). Exploratory analyses were carried out to assess if socio-demographic factors were associated with the use of the platform in the unusual situation induced by the lockdown. We used descriptive analysis (cross-tabulations) as well as logistic regression analysis to assess if any differences exist. The covariates described in the previous section were used.

Implementation and process evaluation

The implementation and process evaluation (IPE) addresses six research questions:

- IPE research question 1: How is the intervention implemented?* What are the enablers and barriers to implementation of the programme? Is implementing the programme feasible?
- IPE research question 2: What constitutes 'usual practice' in the intervention and control schools, and does this change over the duration of the trial? Are control schools using similar interventions to Eedi that might be considered close substitutes for it?
- IPE research question 3: To what extent has the programme changed the working environment and/or pedagogy of teachers in the intervention schools?
- IPE research question 4: What are intervention school teachers' perceptions of how and why the programme is making a difference, if at all, and to what extent might this be different depending, for example, on student groups?
- IPE research question 5: How and why does the implementation of the programme vary? To what extent does any variability affect the achievement of expected outcomes?
- IPE research question 6: What are the costs to schools of delivering Eedi?

*The process evaluation considers the following dimensions of implementation:

  - fidelity/adherence (the extent to which the programme is delivered as intended by the programme developers);
  - dosage (how much of the intervention has been delivered—for example, do teachers use all weekly quizzes, do they use the feedback mechanisms);

- quality (how well different components are delivered—for example, what effect has the on-site training had in terms of quality assurance);
- reach (the rate and scope of participation—for example, are all classes using Eedi, are any students not using it, do these non-users have specific characteristics in common);
- responsiveness (the degree to which participants engage with the intervention—for example, are parents engaging with the programme, are teachers using the full functionality of the programme);
- programme differentiation (the extent to which intervention activities can be distinguished from other, existing practice—for example, are other diagnostic assessment tools and techniques already used);
- monitoring of control/comparison groups (determining the 'counterfactual', undertaken largely through monitoring activity across the control group); and
- adaptation (the nature and extent of changes made to the intervention, what changes are made to the programme as it was intended to be delivered and why, and with what effect).

The process evaluation adopted a mixed methods strategy involving the methods of data collection summarised in Table 5.

Table 5: IPE methods overview

Research methods	Data collection methods	Participants or data sources (number)	Data analysis methods	Research questions addressed	Implementation or logic model relevance
Teacher survey—baseline	Online survey June/July 2018	Year 10 and Year 11 maths teachers n = 634	Descriptive statistics Qualitative responses thematically coded	IPE RQ 2	Secondary outcome Usual practice
Teacher survey 1	Online survey November 2018	Year 10 maths teachers Intervention n = 208 Control n = 304	As above	IPE RQ 1 IPE RQ 2	Secondary outcome Usual practice Implementation dosage, fidelity, reach and responsiveness Quality
Teacher survey 2	Online survey March 2019	Year 10 maths teachers Intervention n = 167 Control n = 281	As above	IPE RQ 2 IPE RQ 3	Secondary outcome Usual practice Implementation dosage, fidelity, reach and responsiveness Changes to working environment Adjustments
Teacher survey 3	Online survey March 2020	Year 11 maths teachers Intervention n = 64 Control n = 181	As above	IPE RQ 2 IPE RQ 3 IPE RQ 4 IPE RQ 6	Secondary outcome Usual practice Implementation dosage, fidelity, reach and responsiveness Changes to working environment Adjustments Cost
Case study visits	Eedi lead teacher interviews n = 8	Teachers n = 8	Combination of deductive and inductive coding in NVivo	IPE RQ 2 IPE RQ 3 IPE RQ 4	As above minus cost
	Maths teacher interviews and paired interviews n = 5	Teachers n = 8	As above	IPE RQ 2 IPE RQ 3 IPE RQ 4	As above minus cost
	Student focus groups	Students (7 focus groups * 9 students = 63)	As above	IPE RQ 1 IPE RQ 5	Implementation and variability
Analysis of Eedi administrative data	Eedi data	Students and schools	Descriptive statistics	IPE RQ 1 IPE RQ 5	Implementation and variability
Interviews with developers	Discussions and email exchanges	Eedi team	Data coded in NVivo	IPE RQ 6 IPE RQ 5	Cost

Online survey

The online survey served two functions: to collect the secondary outcome variable (time spent on homework-related activities) and to collect information for the IPE.

The content of the online survey was developed by AlphaPlus with inputs from their evaluation partners at Manchester Metropolitan University and from the developers (Eedi and Behavioural Insights Team). The survey was based on a brief review of existing research and academic literature on teacher workloads (Department for Education, 2016, 2017; Elliot et al., 2016; Gibson, Oliver and Dennison, 2015). Although it is focused primarily on those tasks that relate to maths homework, it also covered some tasks that are less directly related to homework but that might be affected by any changes in the way homework is set and marked (such as lesson planning).

The baseline survey went through several iterations following feedback from a range of stakeholders involved in the project. The workload measures were scrutinised by the team and externally by two secondary school maths teachers as part of the piloting activities. The online version of the survey was built and hosted in the Qualtrics professional survey platform. This offered high levels of reliability and data security as well as the advanced functionality required by the survey structure.

Maths teachers in all schools (intervention and control) were asked to complete the survey at four points throughout the project (see Table 5). The teacher workload questions remained the same in each wave of the survey, but the process evaluation questions differed depending on the phase of the evaluation. The surveys were distributed to the Eedi lead in the intervention and the point of contact provided by Eedi in the control schools via email. They were asked to circulate the survey link to all the teachers of maths within each school who taught the cohort of interest to the trial (i.e. those starting Year 10 in September 2018).

The timings of the surveys were selected to attempt to achieve as high a response rate as possible by avoiding especially busy periods in schools. They were also selected to minimise any interference (particularly in terms of gauging perceptions of workload) from varying the time of year at which the survey was administered. For example, it was anticipated that the exam period in May–June might elicit different responses in terms of perceived workload and might not represent typical workloads.

The baseline survey was due to be collected in March 2018, but this was delayed until June and July as recruitment of schools to the trial took longer than anticipated. Surveys 2 and 3 took place in March 2019 and 2020 as the evaluation intended. Survey 1 was scheduled and took place in December 2018 to facilitate the collection of data relating to the initial set-up and implementation of the programme.

At the point of distributing the survey, the data held by Eedi was organised at student and school level, but not teacher level. This meant that it was not possible to ascertain how many teachers were taking part in the trial each year. This was problematic as it meant that it was not possible to obtain a teacher-level sampling frame or calculate a teacher-level response rate. In the absence of this information, researchers calculated the number of survey completes per school. They then contacted the Eedi lead in each school to encourage them to increase the number of survey completes by recirculating the survey link. In the first instance, the Eedi lead at any school with zero responses was contacted to inform them that no one at their school had completed a survey. This was sent two weeks before the survey deadline. In the second instance, a follow-up email was sent to the Eedi lead at each school, asking them to compare the number of survey completes for their school against the number of relevant maths teachers in their school. This email was sent one week before the survey deadline.

The sampling frame for the baseline survey was different from the point in the trial the Eedi team attempted to identify Year 10 and 11 maths teachers from the Wonde, a database management system that schools use to control their MIS data, which includes linking teachers to classes. This proved challenging as the schools do not use a standard naming convention for subjects, classes, and year groups. There were hundreds of free text variations and following extensive consideration, these were deemed too wide ranging to be used to establish a reliable sampling frame. The number of survey completes are provided in Table 5. The quantitative survey data was analysed by the evaluation team using Excel and SPSS.

Case studies

The evaluation team aimed to carry out 12 case study visits during spring 2019, but only nine schools agreed to take part.

The selection of the case study schools took place during the second half of the autumn term of 2018. A sampling frame for the case study visits was constructed using the following variables:

- region, the percentage of students eligible for FSM at any time during the past six years, and Ofsted rating;[13] and
- data provided by Eedi on the number of quiz completions per school, banded into low (<= 500), medium (501–1,500), and high (>= 1,501).

A stratified sample of schools was selected to achieve a balance across these variables and thus capture the experiences of a variety of different schools taking part. The Eedi leads at these preferred schools were approached with tailored emails noting the features of their school (such as its region) that made them important to the evaluation. Nevertheless, the evaluators received a low level of response from these schools and eventually approached all intervention schools asking them to take part, rendering the sample frame redundant. The evaluators contacted each of the schools with zero or low usage with tailored correspondence acknowledging that not all schools were using Eedi as planned and emphasising that a telephone or email catch up to discuss barriers to implementation would be extremely useful to the trial. No schools responded to these invitations to take part in the evaluation.

In total, nine schools agreed to take part in a case study (six face to face and three via telephone).[14] The sample was geographically diverse including the East Midlands and West Midlands, South East and South West, North West, and London. Five of the schools had less than 10% of students eligible for FSM at any time during the past six years, two had 10–20%, and two had 20–30% of students eligible. In terms of Ofsted ratings, five were rated good, three were outstanding, and one required improvement. Five schools were considered to have high Eedi usage, three had medium usage, and one was considered to have low usage.

It was proposed that each case study visit would last approximately half a day and during that time the researcher would carry out an interview with the Eedi lead, interviews with individual or small groups of teachers, and a focus group with a small number (< 10) of students who had used Eedi. The schools were given the opportunity to take part in all activities or just a selection of activities.

The interviews were semi-structured with the basic questions established and appropriate prompts listed in advance (Olsen, 2018). Student focus groups were also semi-structured, as it was anticipated that the interactions between participants would encourage the production of more fully articulated accounts (Wilkinson, 1998).

The questions adhered to methodological best practice, so for example, they were non-leading, open ended, and had a predefined list of probes that could be used to encourage learners to discuss the topics further (Liamputtong, 2018). The questions were also piloted with a former teacher. A semi-structured approach was used as it allowed for comparable content to be collected across the groups but also allowed for some exploration of relevant insight that may arise organically in the discussions. The case study information packs and interview and focus group schedules can be found in Appendix 10.

The case studies were conducted during spring and summer 2019. In total, the evaluators spoke to eight Eedi leads, eight maths teachers (across five interviews), and approximately 63 learners (across seven focus groups) (see Table 6).

[13] All available at **https://www.gov.uk/school-performance-tables**

[14] An additional five face-to-face visits were either cancelled or postponed. These were still being followed up at the point of school closures due to Covid-19.

Table 6: Summary of case studies

School	Face to face or telephone	Eedi lead interview	Student focus group	Teacher interview
1	Face to face	1	2	1
2	Telephone	1	0	0
3	Telephone	1	0	0
4	Face to face	1	1	1
5	Telephone	1	0	0
6	Face to face	1	1	1
7	Face to face	1	1	0
8	Face to face	1	1	1
9	Face to face	0	1	1

The interviews with teachers explored in greater depth than the survey their experiences and perceptions of using the programme. The evaluators asked about their experiences of the training and initial set-up of the system, and their ongoing use of the programme—for example, if they were using it as intended; what benefits they had seen so far; whether there were any adjustments to the programme delivery and if so, what and why; had they implemented any changes in practice due to the programme; and had there been any notable impact on students' behaviour, attitudes, or performance in maths.

During the interview with the Eedi lead, the evaluators explored the teachers' views on the costs of implementing the programme, and sought to gain an overarching view of the programme as implemented at the school—for example, perceived barriers and enablers to programme delivery; adjustments and variability in the delivery of the programme (such as different teachers using the programme in different ways); and perceived impact on teachers' workloads and students' attitudes, performance, and behaviour.

The focus groups with students explored their perceptions of the programme and how they felt it might have changed their attitudes, behaviour, and performance in maths, and whether they feel they have developed a better understanding of mathematical concepts. The evaluators also explored how regularly the students used the platform; whether they have used the additional resources available to them (and if so, whether they proved beneficial); and if they have not made regular use of the programme or the additional resources, why not. Students were asked whether their parents had engaged with the programme, and if so, whether and how this has been beneficial to the students themselves. If parents had not engaged, we explored the reasons why this was the case and whether students felt this has been detrimental to their own experiences of the programme.

The interviews and focus groups were audio recorded, with the permission of all participants. The recordings were transcribed and analysed in NVivo against the superordinate themes set out in the evaluation protocol, but within these subordinate themes inductive coding was applied (see Table 7). This was loosely guided by a grounded theory approach as the researchers engaged in line-by-line coding and broke down transcripts into a large number of themes that were rebuilt when the data from different case studies was examined as a whole. There was a relatively large quantity of data to code, but it was by no means exhaustive as the sample was smaller than expected, due to school engagement with the evaluation being much lower than anticipated. The evaluators sought to identify and report counter examples wherever possible.

Interviews with the developer

The evaluation team were in contact with the developer throughout the trial. For example, members of the evaluation team attended an Eedi school training session, visited Eedi to discuss data and implementation, and communicated via email to discuss data regarding the costs associated with using Eedi. Meeting notes and emails from the developer were coded in NVivo in line with the other sources of qualitative data.

Eedi system

To supplement the online surveys and case studies, the evaluation team undertook an analysis of some of the data that is gathered by the Eedi system. This mainly involved examining student and school-level data on the number of quizzes

set, started, and completed, which was used to monitor dosage, fidelity, and variability between and within schools. Data was provided for the duration of Year 10 and until 20 March for Year 11.[15]

Qualitative analysis

All qualitative data from the case studies, developer discussions, and open-ended survey questions was coded in NVivo. The data was coded against the research questions and split into nodes. The high-level themes identified are summarised in Table 7. Quotes are selected to bring to life the themes identified.

Table 7: Thematic framework for the qualitative implementation and process evaluation of Eedi.

Superordinate theme	Themes
Implementation	Training Set-up Use of Eedi Full use of platform Tech issues for students and parents (indirect) Lack of teacher buy-in
Usual practice	Identifying misconceptions Use of other platforms
Changed the working environment and/or pedagogy of teachers	Working environment Parental engagement Workload
How and why the programme is making a difference, if at all	Student guessing The reasoning box Other maths platforms Engaging with Eedi Question quality
How and why does the implementation of the programme vary?	
What are the costs to schools of delivering Eedi?	

Costs

Process evaluation question 6 examines the costs to schools of delivering Eedi. Information on the price of the Eedi functions was collected directly from the Eedi team. This was triangulated with the March 2020 teacher survey, which asked the Eedi lead at the school to estimate the average teacher time associated with setting up Eedi and any resources required. The Eedi intervention does not require the purchase of resources that are not normally available, which makes the costing relatively straightforward. It was delivered to students during Year 10 and Year 11, so costs are estimated over two years.

[15] Additional data from the Covid-19 period is examined as part of the impact evaluation but is excluded from the process evaluation.

Timeline

A timeline for the activities related to the evaluation and intervention delivery is provided in Table 8.

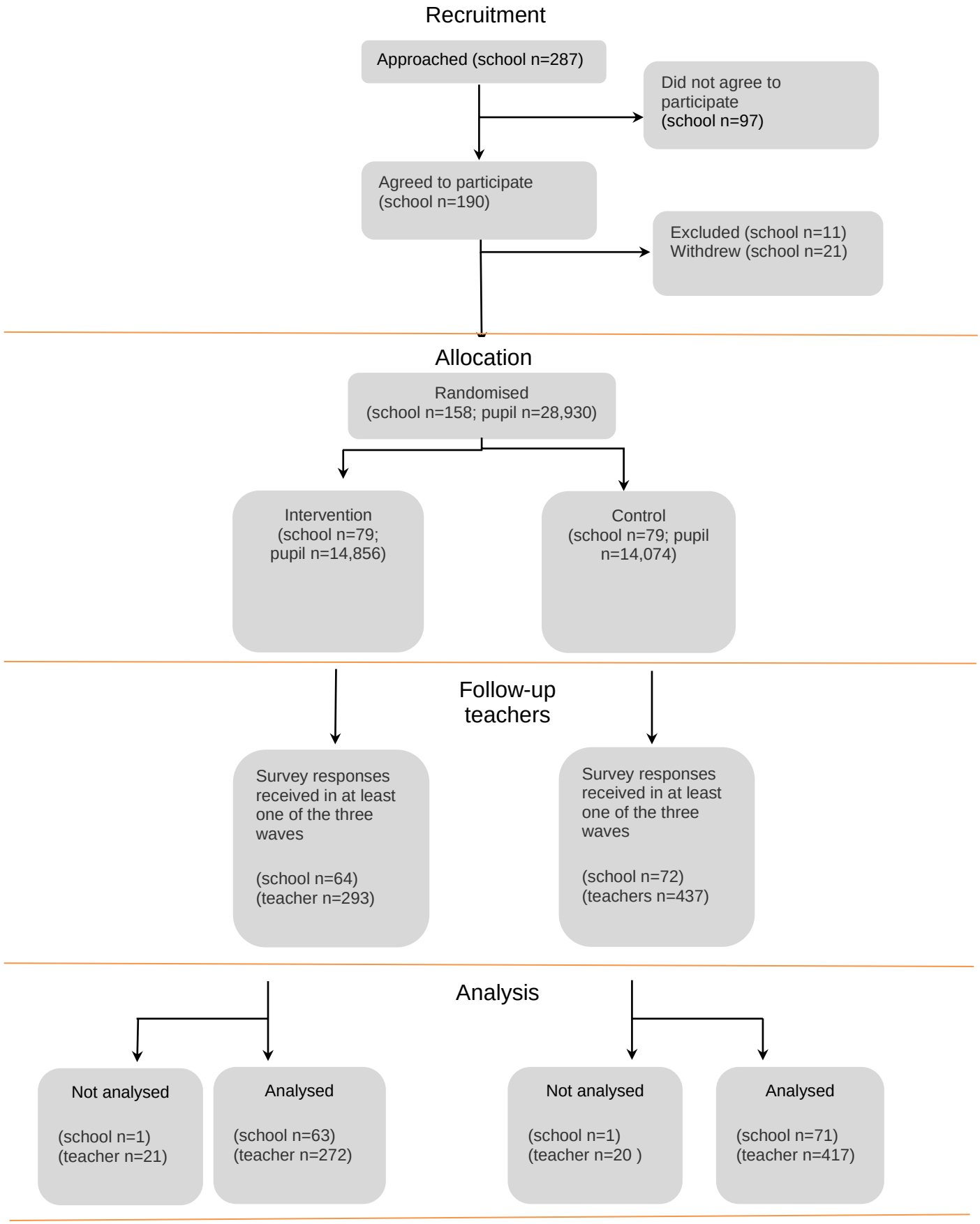
Table 8: Timeline

Dates	Activity	Staff responsible or leading
December 2017	Project set-up	All
	Eedi recruitment	Eedi and BIT
December 2017	Theory of change workshop Logic model developed and agreed Confirm evaluation questions and primary and secondary outcome measures	AlphaPlus
June 2018	Validate and finalise measure of teacher workload	AlphaPlus
June–July 2018	Collect baseline survey	AlphaPlus
August 2018	Analysis of baseline survey	AlphaPlus
June 2018	Interview with developers (cost information)	AlphaPlus
June–July 2018	School randomisation	MMU
June–September 2018	Training for intervention schools—Eedi	Eedi
Throughout academic year 18/19	Eedi monitor and support Year 10 teachers	Eedi
December 2018	Collect workload survey 1	AlphaPlus
January 2019	Analysis of workload survey 1	AlphaPlus
March 2019	Collect workload survey 2	AlphaPlus
May 2019	Analysis of workload survey 2	AlphaPlus
Feb–June 2019	Centre visits	AlphaPlus
September 2019	Training for intervention schools—Eedi	Eedi
Throughout academic year 19/20	Eedi monitor and support Year 11 teachers	Eedi
March 2020	Collect workload survey 3	AlphaPlus
March 20 2020	School closures due to Covid-19	NA
May 2020	Analysis of workload survey 3	AlphaPlus
May 2020	Obtain full, final data from Eedi system	Eedi
May–August 2020	Eedi system data analysis	AlphaPlus/MMU
June 2021	First draft of final report	AlphaPlus/MMU
July–September 2021	Review, feedback revisions to drafts	EEF
TBC	Final report	AlphaPlus/MMU

Exploratory impact evaluation results

Participant flow including losses and exclusions

Figure 1: Participant flow diagram initial design with teacher survey responses



Attrition of the teacher sample

Table 9 examines the number of survey questionnaires returned by wave, at both teacher and school level, for the three samples mentioned previously: 'achieved', 'trimmed', and 'analytical' samples. A challenge faced in this analysis is that the pattern of teacher response by wave varies quite considerably. A number of teachers provided responses at each wave, others in only two waves, and some in one wave only. Furthermore, there were quite wide variations in the sequencing of returned questionnaires by wave.

In order to simplify the analysis and make it transparent, it was agreed in the SAP that for teachers who respond at two or more waves, their reported workload would be averaged by summing the time reported at each wave and dividing this by the number of waves in which they responded. Without this step, a very complex estimator would be required for the estimation of effects. Such an estimator would be required to accommodate inverse probability weights, full treatment by covariate interactions, corrected standard errors for clustering at more than two levels, as well as handling an unbalanced panel or repeated measures. It was felt that developing such an estimator for what is considered exploratory analysis would be disproportionately complex.

This means that the reported sample sizes are lower that the total number of questionnaires returned. For example, consider the 'achieved' teacher sample displayed in Table 9. In total, the sample comprises some 1,204 teacher questionnaires (512 + 447 + 245). After reported teacher workloads are averaged for each teacher across their responses, where applicable, the resulting sample size amounts to 730 unique teachers. Further it can be seen that the teacher questionnaire returns at each wave came from 120 schools (Wave 1), 114 schools (Wave 2), and 64 schools (Wave 3). Note, as described above, the inverse probability weight includes a secondary weight which attempts to correct sample estimates for school level non-response across all three waves (i.e. schools not providing any responses in Waves 1, 2, or 3 of the survey). Impact regression models also control for the number of observations each unique teacher in the data set supplied to the averaging process.

Table 9 also reports the sample questionnaire returns by wave, which form what is referred to as the 'trimmed' sample. In the trimmed sample, reported teacher workload recorded in each survey questionnaire is inspected. If total workload exceeds 900 minutes per week, or 15 hours, it is assumed that reported workload is erroneous and the relevant survey response is removed from the data file. This process resulted in some 20 teacher cases being removed from the data set and a resultant trimmed data file of some 710 teacher observations (n = 710, Table 9). Removing observations from the sample file, where reported workloads exceeded 900 minutes or 15 hours per week, was based on a judgement concerning what level of reported workload was likely to be credible. It was felt that additional workloads in excess of two additional working days per week, above core working hours, were unlikely to be genuine. Such excessive reported workloads were judged to be the result of survey respondents misunderstanding the question or making an error in their written response. Furthermore, this judgement reflected the fact that workloads of this order of magnitude appeared to be outliers in the empirical distribution and thus to be viewed with scepticism.

Finally, Table 9 shows how the final analytical sample used in the main analysis is derived from the questionnaire returns—more generally referred in the wider programme evaluation literature as the 'completed cases' sample. Table 9 reveals that the final analytical sample comprises 689 unique teacher observations in which 21 unique teacher observations have been removed from the sample file due to missing values on the required covariates.

Table 9: Teacher survey returns and sample attrition.

		Intervention	Control	Total
Achieved teacher sample (n=730 post averaging)				
Wave 1	Teachers	208	304	512
	Schools	56	64	120
Wave 2	Teachers	167	280	447
	Schools	48	66	114
Wave 3	Teachers	64	181	245
	Schools	25	39	64
Trimmed teacher sample (n=710)				
Wave 1	Teachers	201	298	499
	Schools	56	64	120
Wave 2	Teachers	162	273	435
	Schools	48	66	114
Wave 3	Teachers	58	178	237
	Schools	24	39	63
Analytical teacher sample (n=689)				
Wave 1	Teachers	196	290	486
	Schools	55	63	118
Wave 2	Teachers	157	268	425
	Schools	47	65	112
Wave 3	Teachers	58	169	227
	Schools	24	38	62

Teacher and school characteristics

Table 10 examines the characteristics of the teachers by intervention and control group schools in the analytical sample. Table 11 takes the same sample but reports the results subsequent to the data being weighted by the inverse probability weight.

As noted above, the analytical sample comprises 272 teacher observations from intervention schools and 417 from control schools. Ordinarily we would expect these two samples to be approximately the same in absolute size. This difference in absolute sample size led to the expectation that the two samples would be quite unbalanced in means and proportion by trial arms in measured covariates. It is not inevitable that having ‘unbalanced’ trial arms leads to bias in sample estimates (and the converse, that balance between trial arms means an absence of bias), but this disparity does raise concerns (Bell et al., 2013). As Table 10 demonstrates, the raw analytical intervention and control school samples of teachers were relatively well-balanced. Whilst differences in means and proportions for a number of covariates exceeded 10% of a standard deviation, the standardised mean difference between intervention and control school teachers in means and proportions did not exceed 20% for any covariate. It is worth bearing in mind, however, that any differences that are observed could be the result of systematic variation in response patterns by the trial arms rather than the consequence of randomisation, and therefore a source of bias, albeit limited in magnitude. It is also worth remembering that we cannot rule out serious imbalances resulting from response bias in covariates that remain unmeasured.

Table 10 reveals that three quarters of teachers in the analytical sample are found in academy schools with school rolls on average exceeding 1,000 students. Around one in ten students within schools from which the sample is drawn are SEN, with 12% qualifying for FSM. Around 45% of students achieved grades 5–9 in English and maths in the school year prior to the commencement of the study.

The majority of teachers themselves are classroom-based with no further leadership or administrative roles (69%). One in ten are newly qualified and nine in ten are maths specialists. Over half of teachers were female (54% in the intervention group and 58% in the control group). Average length of service stood at 11 years, with length of time in the current school around six years.

The intervention and control group comparisons for teachers weighted by the inverse probability weight reveal that subsequent to weighting, any imbalances between the teacher samples from the two arms of the trial are almost entirely removed. Apart from only two covariates—‘percentage of students within schools achieving GCSEs in maths and English at grades 5–9’ and ‘number of year groups taught’—no differences between intervention and control group

teachers exceed 12% of a standard deviation. This means that any bias in the measured covariates that has resulted from differential teacher sample attrition in the two arms of the trial is largely removed by applying the weights to the data. Further, any differences between the teacher samples that are the consequences of randomisation will also be removed. Again, however, it should be stressed that imbalances in unmeasured covariates may be present.

Table 10: As analysed teacher analytical sample

School level (categorical)	Intervention	Control	Difference (means/%)	Standardised difference (%)
	%	%		
Academy	76	74	+2	+4
Community	8	10	-2	-7
Foundation	4	9	-5	-19
Voluntary	13	7	+6	+17
Unweighted n=	272	417		
School level (continuous)	Mean	Mean	Difference (means/%)	Standardised difference (%)
Number of students	1,159	1,132	+27	+6
Percentage female	51	50	+1	+11
Percentage SEN	11	10	+1	+17
Percentage EAL	13	11	+2	+16
Percentage FSM	12	12	-	-
Student/teacher ratio	16	16	-	-
% grades 5–9 in maths and English GCSE	43	44	-1	-10
Unweighted n=	272	417		
Teacher level (categorical)	%	%	Difference (means/%)	Standardised difference (%)
Classroom teacher	68	69	-1	-2
Leadership role	23	23	-	-
Other role	13	15	-2	-8
Newly qualified teacher	9	10	-1	-5
Maths specialist	92	90	+2	+4
Working full time	88	82	+6	+14
Unweighted n=	272	417		
Gender (female)	54	58	-4	-36
Unweighted n=	182	340		
Teacher level (continuous)	Mean	Mean	Difference (means/%)	Standardised difference (%)
Length of service (years)	11	11	-	-
Years in current school	5.6	6.1	-0.5	-7
Years in current role	4.2	4.8	-0.6	-13
Number of year groups taught	4.0	4.2	-0.2	-16
Number of classes/sets taught	1.2	1.3	-0.1	-7
Unweighted n=	272	417		

Table 11: As analysed teacher analytical sample weighted by the inverse probability weight from preferred specification

School level (categorical)	Intervention	Control	Difference (means/%)	Standardised difference (%)
	%	%		
Academy	76	75	+1	+2
Community	9	9	-	-
Foundation	6	6	-	-
Voluntary	9	10	-1	-1
Unweighted n=	272	417		
School level (continuous)	Mean	Mean	Difference (means/%)	Standardised difference (%)
Number of students	1,153	1,137	16	4
Percentage female	50	51	-1	-5
Percentage SEN	11	10	+1	6
Percentage EAL	12	12	-	-
Percentage FSM	12	12	-	
Student/teacher ratio	16	16	-	
% grades 5–9 in maths and English GCSE	43	44	-1	-12
Unweighted n=	272	417		
Teacher level (categorical)	%	%	Difference (means/%)	Standardised difference (%)
Classroom teacher	69	69	-	
Leadership role	22	22	-	
Other role	15	14	+1	+1
Newly qualified teacher	9	10	-1	-1
Maths specialist	91	91	-	
Working full time	84	84	-	
Unweighted n=	272	417		
Gender (female)	55	57	-2	-5
Unweighted n=	182	340		
Teacher level (continuous)	Mean	Mean	Difference (means/%)	Standardised difference (%)
Length of service (years)	11	11	-	-
Years in current school	6.0	5.9	+0.1	+1
Years in current role	4.5	4.5	-	-
Number of year groups taught	4.0	4.2	-0.2	-12
Number of classes/sets taught	1.2	1.2	-	-
Unweighted n=	272	417		

Outcomes and analysis

Table 12 reports a range of summary statistics for reported teacher workload in the ‘raw’, ‘trimmed’, and ‘analytical’ samples. Looking first at the raw sample, which contains observations prior to extreme or unrealistic workload values being removed from the sample, the standard deviations among intervention and control group samples are quite different—the standard deviation among the control group is twice that of the intervention group. Median workloads are identical but control group teachers report mean workloads almost 40 minutes higher than intervention group teachers. These differences imply the presence of some extremely high reported workloads among teachers. It is difficult to know how far these extreme values are valid. Reported workloads in excess of 900 minutes or 15 hours are pruned from the data. This pruning is reflected in the summary statistics for the ‘trimmed’ sample. In total, nine teacher observations are removed from the intervention school sample, with values ranging from 1,020 minutes (17 hours) of work per week related to maths homework in addition to classroom contact, to 4,210 minutes (70 hours) per week. From the sample of control teachers, eight cases were deleted from the sample, with reported weekly workloads ranging from 2,500 minutes (42 hours) to 9,480 minutes (158 hours)—impossible weekly values. Removing a total of 17 teacher observations leads to the sample size falling from n = 727 to n = 710, with a further consequence that the standard deviations in the two groups move more into line with each other (SD intervention = 192.5; SD control = 204.6). There remain differences between intervention and control group teachers in both means and medians within the trimmed sample. Intervention group teachers report mean workloads 21 minutes lower than control group teachers (232.7 minutes compared with 253.9 minutes). Likewise, the difference in median workload is -13 minutes (205 minutes compared with 218 minutes).

Within both intervention and control group samples, mean values are somewhat higher than median values, suggesting the presence of high reported workloads among a minority of teachers in both groups. The analytical sample displays similar patterns. Within both groups the mean reported workload is higher than that for the median, with similar standard deviations. Between groups, intervention group teachers report lower mean and median workloads (232 minutes compared with 256 minutes; and 210 minutes compared with 220 minutes respectively).

To summarise, intervention group teachers generally report lower workloads than those in the control group. It is difficult to know how far such a divergence was present prior to randomisation and therefore reflects selection bias. What is clear, however, is that both intervention and control teacher samples (particularly the control teacher sample) contained a number of observations with extremely high reported workloads. It is likely that these high values account, at least in part, for differences in mean workloads in the raw sample, given that the two groups are virtually identical in terms of reported median workloads. Once the sample is trimmed of reported non-classroom workload values over 15 hours per week, the distributions in terms of their second moments start to look similar. However, differences in mean values do remain and differences in medians emerge. Removing extreme values from a sample is usually a matter of judgement. The view has been taken that reported workload values at 15 hours per week or less cannot necessarily be assumed to be reported in error.

Table 12: Summary statistics (unweighted)—teacher workload by trial arm for raw, trimmed, and analytical samples

	Intervention group teachers	Control group teachers	All teachers
Raw sample teacher-reported maths-related workload (minutes per week)			
Mean	270.1	308.2	293.0
Median	211.3	211.7	216.7
Standard deviation	285.6	591.0	490.5
n=	290	437	727
Trimmed sample teacher-reported maths-related workload (minutes per week)			
Mean	232.7	253.9	245.5
Median	205.0	218.3	215.0
Standard deviation	192.5	204.6	200.2
n=	281	429	710
Analytical sample teacher-reported maths-related workload (minutes per week)			
Mean	232.2	255.5	246.3
Median	210.0	220.0	215.0
Standard deviation	193.4	202.8	199.5
n=	272	417	689

Having considered the distribution of reported teacher workload among teachers responding to the survey in the two arms of the trial, attention now focuses on sample estimates of the average effect of intention to treat. Estimates from a number of regression models are reported in Table 13. Given that this is exploratory analysis, a number of different model specifications are reported and discussed, though the effect size is derived only for the specification that is preferred. The estimates are all based on analyses performed on the analytical sample.

The unadjusted difference in means in observed workloads is examined in the second line of Table 13. Teachers in the intervention arm of the trial report workloads on average 23 minutes less per week than those in the control arm (β = -23.32, 95% CI: -53.21 to +6.57). The confidence interval indicates the range of population parameter values that cannot be ruled out given this data and model. The 95% confidence interval ranges from minus 53 minutes to plus 7 minutes; all other values for the parameter are rejected at the 95% level.

The third, fourth, and fifth rows of Table 13 report estimates of the effects on teacher workload derived from various estimators incorporating a range statistical adjustments. The third row displays results from a simple inverse probability weighted bivariate regression. Teachers in the intervention group record workloads on average 29 minutes below those of control group teachers (β = -28.74, 95% CI: -58.35 to +0.86); estimates for the population parameter ranging from minus 58 minutes to just under plus one minute cannot be ruled out on the basis of our model and data.

Row four of the table presents estimates from an unweighted multiple regression estimator with full covariate by treatment group interactions. The estimate for the average intention to treat parameter in this specification is that

intervention school teachers record on average workloads 26 minutes below that of teachers in control schools (β = -26.31, 95% CI: -52.44 to -0.18). Further, the coverage of the 95% confidence interval is marginally reduced and parameter values ranging from minus 52 minutes to minus one fifth of one minute cannot be ruled out. Although these results are consistent with the rejection of the null hypothesis at the 95% level, the coverage of the confidence interval is still quite wide, and plausible values for the parameter that are very close to zero cannot be rejected.

Row five of Table 13 contains results from the preferred model specification. It is preferred because it is doubly robust and estimated on the full analytical sample. The main limitation of this specification, as with all the results discussed until this point, is that it does not contain a pre-intervention measure of workload at either the teacher or school level—although through the inclusion of covariates and treatment by covariate interactions as well as inverse probability weighting, the estimator does correct for imbalances across a range of other measured covariates. The omission of a baseline teacher workload measure is, however, an appreciable limitation. In other words, we cannot rule out the possibility that teachers responding to the survey from intervention schools had lower workloads than those responding from control schools at the outset. Nonetheless, the results show that teachers in intervention schools report workloads 28 minutes below those in control schools (β = -28.34, 95% CI: -53.87 to -2.81). Parameter values with workload reductions ranging from 54 minutes to approximately three minutes cannot be rejected on the basis of these results. Despite rejection of the null hypothesis, estimates are consistent with a wide range of parameter values. Furthermore, results from the regression are equivalent to a standardised mean difference effect of -0.14 (Hedges' *g*) (95% CI: -0.29 to +0.01). Effect sizes below 0.20 are usually considered small.

The final two estimates reported in Table 10 are variants of the inverse probability weighted regression estimator. The first takes natural logarithms of reported teacher workloads. Generally dependent variables are converted to natural logarithms where they contain only positive values and where the residuals are not normally distributed. The results in row six of Table 13 again show a reduction in workload (β = -0.12, 95% CI: -0.23 to -0.01) and rejection of the null hypothesis at the 95% level, but again the 95% confidence interval is quite wide. The second specification includes the dependent variable in minutes as before, but with an additional covariate entered into the model and derived from the baseline survey responses. This covariate records average workloads for teachers responding to the baseline survey, aggregated to the school level. Aggregation was undertaken because of difficulties in linking baseline survey responses to individual teacher-level observations in Waves 1 to 3 of the survey and due to the large number of teachers responding at Waves 1 to 3 who did not provide a baseline measure of their workload. This final specification is estimated on a much-reduced sample (n = 598 as opposed to n = 689). The results show a reduction in mean workload of teachers in intervention schools that is 14 minutes below their counterparts in control schools (β = -13.93, 95% CI: -38.71 to +10.85). Due to a lack of confidence in this baseline measure and reduced sample size, however, less emphasis is placed in these results than is the case with the preferred specification.

Table 13: Sample estimates of average intention to treat values—reported teacher workloads in minutes per week

	Total sample (n=)	Intervention group teachers Mean (95% CI)	Control group teachers Mean (95% CI)	Estimated effect (95% CI)	Effect size (Hedges' *g*) (95% CI)	Pooled unconditional within group variance	Intra-class* correlation coefficient (95% CI)
Variance decomposition	689						0.18 (0.12 to 0.28)
Unadjusted estimates	689	232.17 (209.36 to 254.97)	255.49 (236.17 to 274.81)	-23.32 (-53.21 to 6.57)			
Unadjusted estimates—weighted by inverse probability weight	689	229.04 (208.53 to 250.88)	257.78 (238.39 to 277.17)	-28.74 (-58.35 to 0.86)			
Adjusted (unweighted) estimates—full set of covariates and covariate by treatment interactions	689	229.99 (210.12 to 249.86)	256.30 (237.94 to 274.65)	-26.31 (-52.44 to -0.18)			
Adjusted estimates weighted by inverse probability weight—full set of covariates and covariate by treatment interactions	689	229.48 (210.03 to 248.93)	257.82 (239.99 to 275.66)	-28.34 (-53.87 to -2.81)	-0.14 (-0.29 to 0.01)	200.29	
Teacher workload in natural logarithms, adjusted estimates weighted by inverse probability weight—full set of covariates and covariate by treatment interactions	689	5.26 (5.17 to 5.34)	5.38 (5.30 to 5.46)	-0.12 (-0.23 to -0.01)			
Inclusion of school-level baseline teacher workload, adjusted estimates weighted by inverse probability weight—full set of covariates and covariate by treatment interactions	598	234.92 (215.40 to 254.44)	248.85 (231.19 to 266.50)	-13.93 (-38.71 to 10.85)			

Notes: The unconditional intra class correlation coefficient is reported from a multi-level unadjusted variance decomposition.
All estimates are obtained through estimation procedures within the '`teffects`' suite of commands in Stata v16.
Standard errors and confidence intervals are obtained using the cluster robust sub command within '`teffects`' in Stata v16 where clusters are schools.
The effect size is obtained by dividing the regression parameter estimate by the pooled within-group weighted standard deviation. In a departure from the revised SAP, the confidence interval on the effect size estimate is obtained using the effect size calculator '`esizei`' and subcommand '`hedgesg`' in Stata v16.

The final analyses in this section are presented in Table 14. The analyses examine the possible consequences for the results of extreme inverse probability weights and assess the sensitivity of results to the imposition of common support over the sample—though due to initial randomisation, we do not anticipate a significant problem of this nature commonly encountered in observational studies. Furthermore, although the distribution of weights by intervention and control group samples do not suggest any noticeable problem with extreme weights nor a lack of common support, these analyses are reported nonetheless by way of confirmation.

Table 14: Sensitivity test for inverse probability weights

	Total sample size (n=)	Intervention group teachers (95% CI)	Control group teachers (95% CI)	Estimated effect (95% CI)
Inverse probability weighted regression, weights trimmed at 1st and 99th percentiles	689	229.47 (210.00 to 248.93)	257.78 (239.96 to 275.62)	-28.32 (-53.85 to -2.78)
Inverse probability weighted regression, weights trimmed at 5th and 95th percentiles	689	229.54 (210.14 to 248.93)	257.87 (240.05 to 275.68)	-28.33 (-53.79 to -2.86)
Inverse probability weighted regression with common support on the propensity score imposed	670	229.24 (209.79 to 248.69)	257.48 (239.12 to 275.84)	-28.25 (-54.07 to -2.43)

The total sample from which estimates are derived and where common support is imposed stands at n = 670. 19 cases are removed from the sample that are either control school teachers with weights below the lowest weight among intervention teachers or, in this case, control teachers with weights above the highest value across intervention school teachers. As can be seen, neither trimming the weights nor imposing common support leads to appreciable change in the sample estimates and their confidence intervals.

Sensitivity to the consequences of hidden confounders

As described in the Methods section of this report, further sensitivity analysis is undertaken in order to determine the potential consequences for the estimated effects arising from hidden confounds. Following Hong (2004) and West et al. (2014), we hypothesise the existence of a hidden confound U. In order to proceed, we make a number of assumptions about plausible features of U based on reported values presented in this report for variables whose characteristics we do observe. First, we need to make an assumption about the standardised mean difference between intervention and control group teachers in U. This is the remaining bias in U. For this, we assume that the standardised mean bias in U takes on a magnitude equivalent to the largest standardised difference in means observed in the analytical sample prior to weighting (see Table 8a); hence a value of 0.19 is chosen. This value is rescaled by dividing it by $\sqrt{2}$, resulting in a value of -0.13. Next, we need to assume a value for the partial correlation coefficient between U and the outcome—in this case, teacher workload. Consistent with Hong (2004), we examine the standardised regression coefficients for all covariates regressed against the outcome and take the largest value, which in our case is 0.19. These values are entered into the following equation:

$$ES^* = \widehat{ES} - \gamma\left(\frac{d_U}{\sqrt{2}}\right)$$

The result of this computation is ES^* = -0.11, where $\widehat{ES}$ comes from our preferred specification above, i.e. $ES = -0.14$. This means that were our analysis to incorporate a measured covariate that had the features of U assumed here, the effect size on our preferred analysis would fall from 0.14 to 0.11. Very crudely, the ES = -0.11 can be converted into a difference in minutes through multiplying it by the pooled standard deviation and dividing the resulting quantity through by the standard error of the original regression estimate to get an approximate Z-statistic (the value of the standard error of the treatment effect estimate in minutes is SE = 13.03). The ES 0.11 is equivalent to approximately 22 minutes, i.e. 0.11 * 200. The result of this calculation gives an approximate Z of 1.69 (200 × 0.11/13), which indicates that the adjusted ES of -0.11 would not reach statistical significance given a two-tailed test.

What this shows is not a wholly unsurprising result; namely, that the findings derived from our preferred specification of the inverse probability weighted regression estimator are quite sensitive to unmeasured confounds of a plausible magnitude.

Analysis of Eedi administrative data examining take-up and usage

Analysis was carried out to assess whether usage of the data of the Eedi platform varied by student or school characteristics. As described in the Methods section, for each outcome, two models were implemented: one that only included student-level covariates and another that included additional school-level covariates.

Overall, the results suggest that English being a second language and deprivation potentially act as a barrier to the use of the platform. Teachers in schools with a higher proportion of EAL students are less likely to set assignments, while FSM students are less likely to start and complete assignments. Conversely, it is also apparent that the platform is used less in schools with higher levels of average school prior attainment. The results are displayed in Table 15 and summarised below.

Model 1: Number of assignments set

Looking solely at the impact of student-level covariates, the results show that receiving FSM is associated with a decrease in the likelihood of students being set assignments. However, once school-level characteristics are included, this variable fails to reach conventional levels of statistical significance while the percentage of EAL students in the school attains significance. An increase in the proportion of EAL students in a school appears to be associated with a decrease in the number of assignments set per student.

Model 2: Number of assignments started

The results suggest that student FSM status is negatively associated with assignments a student starts. There were no associations by gender or month of birth. In addition, the proportion of EAL students in a school and levels of prior attainment are also negatively associated with assignments started. Students in foundation schools started fewer assignments compared to those in academies, while those in voluntary schools started more.

Model 3: Number of assignments completed

Receiving FSM is negatively associated with the number of assignments a student completes. There were no differences by gender or month of birth. In addition, the percentage of school rolls made up of SEN or EAL students, and prior attainment, was negatively associated with the number of assignments completed. Students in community and foundation schools completed fewer assignments compared with those in academies.

Model 4: Number of mistakes resolved

Boys and students on FSM resolved a lower number of mistakes, as well as students in foundation schools (compared with academies). Aggregate prior attainment at the school level was positively associated with the resolution of mistakes by students.

Model 5: Number of parent logins

A child's gender does appear to be associated with the number of parental logins to the system, with the parents of boys being more likely to log into the platform. The parents of FSM students were less likely to log in. In addition, the percentage of the school roll deemed EAL and SEN was negatively associated with parental logins.

Analysis of test pairs

We measured the difference between the proportion of correct answers in two sequential quizzes on the same topic (administered approximately three weeks apart). The results suggest a minimal improvement in the second quiz compared with the first. Descriptive analyses (t-test) suggest a statistically significant difference between the scores on the two quizzes of just under 0.5 percentage points. This is substantially less than one quiz question.

We also implemented inferential analyses to assess the impact of student and school characteristics. The results (Table 16) suggest that boys and students who receive FSM are more likely to have lower scores. The increase in school attainment levels also increases the likelihood of correct responses.

Table 15: Regression results for the analysis of Eedi system data (marginal effects with 95% confidence intervals in parentheses)

Marginal effects	Model 1: Assignments set		Model 2: Assignments started		Model 3: Assignments completed		Model 4: Mistakes resolved		Model 5: Parent logins	
	Student-level covariates	Student and school-level covariates	Student-level covariates	Student and school-level covariates	Student-level covariates	Student and school-level covariates	Student-level covariates	Student and school-level covariates	Student-level covariates	Student and school-level covariates
Student-level covariates										
Gender: boys	0.47 (-1.17 to 2.12)	0.59 (-0.82 to 2.01)	-0.23 (-1.29 to 0.84)	-0.23 (-1.37 to 0.91)	-0.06 (-1.21 to 1.09)	-0.12 (-1.34 to 1.10)	*-4.04 (-6.80 to -1.29)*	*-3.11 (-6.16 to -0.07)*	*0.03 (0.01 to 0.04)*	*0.03 (0.01 to 0.04)*
FSM 6	*-1.76 (-3.57 to 0.04)*	-0.15 (-1.25 to 1.25)	*-4.97 (-6.76 to -3.22)*	*-2.74 (-4.60 to -1.42)*	*-4.29 (-6.25 to -2.33)*	*-2.12 (-3.64 to -0.60)*	*-5.74 (-9.75 to -1.74)*	*-4.80 (-8.26 to -1.34)*	*-0.04 (-0.07 to -0.02)*	*-0.03 (-0.04 to -0.01)*
Month of birth	0.04 (-0.09 to 0.16)	0.05 (-0.06 to 0.16)	-0.06 (-0.16 to 0.04)	-0.04 (-0.14 to 0.06)	-0.07 (-0.18 to 0.04)	-0.05 (-0.16 to 0.06)	-0.02 (-0.33 to 0.30)	-0.04 (-0.33 to 0.24)	-0.00 (-0.01 to 0.01)	-0.00 (-0.01 to 0.01)
School-level covariates										
Percentage SEN		-0.32 (-0.68 to 0.05)		-0.13 (-0.38 to 0.12)		*-0.29 (-0.57 to -0.02)*		0.28 (-0.28 to 0.84)		-0.00 (-0.01 to 0.01)
Percentage EAL		*-0.36 (-0.52 to -0.20)*		*-0.20 (-0.32 to -0.08)*		*-0.16 (-0.29 to -0.03)*		-0.13 (-0.37 to 0.11)		*-0.001 (-0.00 to -0.00)*
Percentage FSM		0.26 (-0.21 to 0.72)		-0.22 (-0.50 to 0.05)		-0.19 (-0.49 to 0.10)		0.22 (-0.36 to 0.81)		*-0.002 (-0.00 to -0.00)*
% grades 5–9 in maths and English GCSE		-0.07 (-0.29 to 0.15)		*-0.16 (-0.31 to -0.01)*		*-0.21 (-0.37 to -0.05)*		*0.73 (0.38 to 0.81)*		-0.00 (-0.01 to 0.01)
School type: community school (ref. academy)		3.58 (-5.25 to 12.41)		-3.64 (-7.67 to 0.39)		*-6.22 (-10.1 to -2.29)*		-7.28 (-18.30 to 3.74)		*-0.05 (-0.09 to -0.00)*
School type: foundation school (ref. academy)		*-26.1 (-38.8 to -13.4)*		*-13.3 (-15.4 to -11.3)*		*-14.0 (-17.6 to -10.5)*		*-21.1 (-33.8 to -8.56)*		-0.09 (-0.13 to -0.06)
School type: voluntary school (Ref. academy)		7.50 (-1.01 to 16.02)		*6.90 (1.55 to 12.25)*		3.08 (-1.49 to 7.66)		6.54 (-2.24 to 15.36)		*0.06 (0.03 to 0.09)*
n	13,785	13,732	9,938	9.888	7,878	7,858	7,878	7,858	13,785	13,732

Note: regression estimates are marginal effects. For example, Model 1 reveals that on average across the sample students who are FSM (marginal effect = -1.76, 95%CI: -3.57 to 0.04) are set 1.8 fewer assignments than students who are not FSM. 95% confidence intervals are reported in parentheses.
Model 1 is a two-part model where the component models are logistic and OLS, and Models 2 to 5 are negative binomial regressions.

Table 16: Regression results for the analysis of Eedi test pairs

Independent variables	Main analysis: Proportion of correct responses in Quiz B	Analysis of matching: Quiz A not matched to Quiz B	Analysis of matching: Quiz B not matched to Quiz A
	Multilevel linear regression	Multilevel logistic regression (odds ratios)	Multilevel logistic regression (odds ratios)
	Unit of analysis: quiz pairs	Unit of analysis: students	Unit of analysis: students
Proportion of correct responses in Quiz A	*0.35 (0.34 to 0.36)*		
Student-level covariates			
Gender: boys	*-2.06 (-2.70 to -1.41)*	*1.32 (1.15 to 1.52)*	*1.38 (1.17 to 1.63)*
FSM 6	*-1.95 (-2.81 to -1.09)*	*1.19 (1.01 to 1.40)*	*1.27 (1.04 to 1.55)*
Month of birth	-0.08 (-0.17 to 0.01)	1.01 (1.01 to 1.40)	1.00 (0.98 to 1.03)
School-level covariates			
Percentage SEN	0.14 (-0.06 to 0.33)	1.02 (0.95 to 1.09)	0.97 (0.89 to 1.06)
Percentage EAL	0.06 (-0.02 to 0.15)	1.00 (0.97 to 1.03)	1.00 (0.97 to 1.04)
Percentage FSM	-0.12 (-0.34 to 0.09)	1.02 (0.94 to 1.11)	1.07 (0.97 to 1.19)
% grades 5–9 in maths and English GCSE	*0.18 (0.06 to 0.30)*	1.00 (0.96 to 1.05)	1.01 (0.96 to 1.07)
School type: community school (ref. academy)	1.63 (-2.31 to 5.56)	1.69 (0.37 to 7.81)	0.28 (0.04 to 1.80)
School type: foundation school (ref. academy)	-0.45 (-17.26 to 16.37)	3.75 (0.16 to 87.89)	10.89 (0.34 to 351.1)
School type: voluntary school (ref. academy)	2.02 (-1.14 to 5.18)	0.30 (0.07 to 1.21)	0.35 (0.07 to 1.83)
n	48,575	7,337	6,436

Analysis of Eedi usage during the Covid-19 lockdown

The analysis was not implemented as planned due to the substantially lower number of observations. Only 109 students used the platform during lockdown. Descriptive analyses suggest that there are significantly more girls amongst the students who used the platform (62% girls versus 38% boys) but there are no differences based on FSM.

Implementation and process evaluation results

IPE research question 1: How is the intervention implemented? What are the enablers and barriers to implementation of the programme? Is implementing the programme feasible?

The critical ingredient of the Eedi intervention is the setting of two quizzes per week, as outlined in the theory of change and the MoU. For this to happen, maths teachers first need to receive some form of Eedi training and platform credentials and set up their scheme of work in Eedi. They then are required to set and monitor homework on a regular basis.

Training

Each school was offered at least two training sessions over the two-year period. The initial training ahead of delivery in Year 10 took place either at the end of the 2017/2018 academic year or at the beginning of the 2018/2019 academic year. Refresher training was offered to all teachers in the maths department responsible for the GCSE cohort at the beginning of the 2019/2020 academic year when the students entered Year 11. Eedi reported some challenges finding suitable training dates as schools tended to require similar dates. To adapt to this, Eedi provided an online training session that was followed up by face-to-face training.

Extra training was also offered to schools when new features were introduced to Eedi, such as the 'misconceptions tab'. Additionally, email updates were circulated by Eedi to the lead teachers approximately every two weeks to update the lead on the schools' quiz activity. At the end of the email, inactive and low quiz completion schools were prompted to book in a face-to-face training.

The Year 10 teacher survey (December 2018) suggests that 88% of the 206 teachers who responded had attended an Eedi-led session (84%) or a session led by a teacher at their school who had attended an Eedi session (4%).

Table 17: Teacher training attendance in Year 10

Did you attend the Eedi training session held at your school last term or earlier this term?	n	%
Yes, an Eedi-led session	173	84
Yes, a session led by a teacher in my school who attended an Eedi session	8	4
No	23	11
Don't know / can't remember	2	1
Total	206	100

Source: Teacher Survey 1

Of the 61 intervention teachers who responded to the March 2020 survey, 75% (n = 45) reported using Eedi in the last academic year (2018/2019) with Year 10 and of these teachers, 31% (n = 14) attended refresher training (see Table 18).

Table 18: Refresher training attendance in Year 11

Did you attend any refresher training?	n	%
No	31	69
Yes	14	31
Total	45	100

Source: Teacher Survey 3

Setting up Eedi

Teachers are required to set up their Year 10 scheme of work in Eedi. Some schools initially experienced challenges because they had a bespoke scheme of work that did not match that provided by Eedi's content partners. In these instances, Eedi offered to set up the scheme of work on the teacher's behalf.

Teacher interviews suggest that in at least five of the nine case study schools, a lead teacher set up the scheme of work for their colleagues.[16] On the one hand, this could be considered to be a facilitating factor as it reduced the amount of time required by their colleagues to set up the platform. On the other hand, it also meant that some of their colleagues were less familiar with Eedi's features, particularly how to amend the quiz schedule.

The scheme of work typically needed to be reassigned in Year 11. Eedi reported that some teachers finished covering the units in Year 10, which meant the Year 11 scheme of work did not necessarily function as intended. Instead, teachers were given the option of creating a more flexible scheme of work that allowed them to 'create as they go'. They were also given the option of using a revision scheme of work that consists of mixed topic quizzes as opposed to the original quiz sets that focused on a single topic. This highlights that throughout the trial, Eedi was a live product with an active userbase beyond the trial population. Its functions were developed and improved as the trial progressed and as such, the features captured in the theory of change in 2018 do not necessarily reflect its current capability.[17]

The Eedi delivery team noted two barriers to setting up Eedi in schools:

- Teacher churn: the Eedi lead would often move to another school, so the Eedi team were required to re-sell the intervention and find a new lead at the school.
- Changes to the school direction: as the trial progressed, some schools joined multi-academy trusts that set new priorities and diverted momentum away from Eedi.

The evaluation flagged that the students were not provided with a face-to-face Eedi training session but were directed to online guides. As teachers and students have different Eedi interfaces, it was difficult for some teachers to provide guidance. Student training is also missing from the theory of change, which suggests that this may have been overlooked.

Teacher use of Eedi to set homework

The MoU states that all classes (and thus students) are expected to be set an average of two Eedi quizzes per week (see Section 4.2 in Appendix 4).[18] If we consider an academic year has approximately 40 teaching weeks, we would expect the mean number of assignments set per student to be approximately 80 in Year 10 and 52 in Year 11 (14 weeks of teaching excluded due to school closures on 20 March 2020).

In total 347,194 assignments were set in Year 10 and 60,241 were set in Year 11 (see Table 19). When considered across the 13,971 students taking part, the mean number of assignments per student was 25 (SD 27) in Year 10 and 4 (SD 10) in Year 11. This is much lower than the expected compliance.

Table 19: The overall mean number of assignments set per student, by academic year

Mean number of assignments set per student	Year 10*	Year 11**
Number of students	13,972	13,972
Mean	25	4
SD	27	10
Min	0	0
Max	171	73

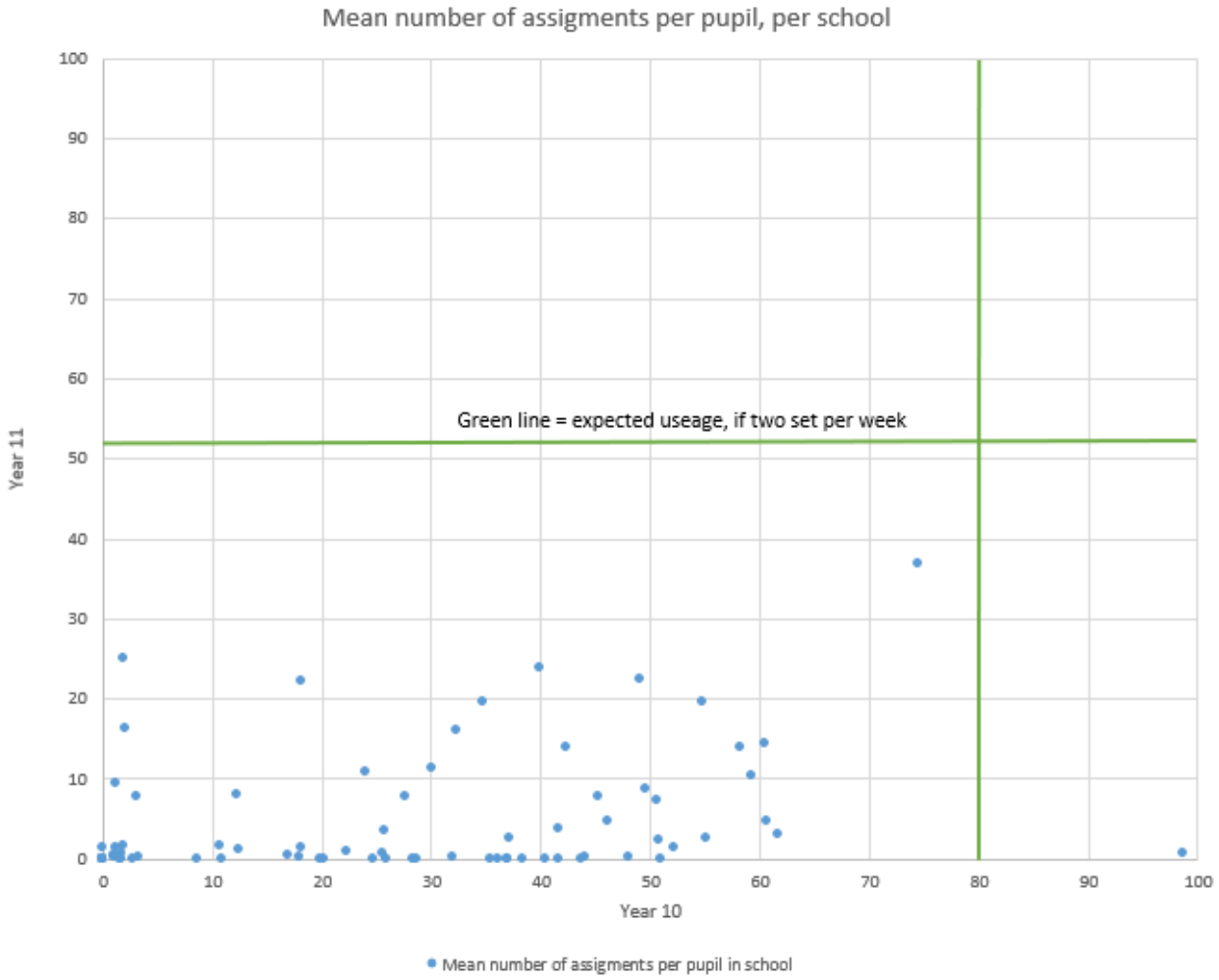
*Source: Eedi platform usage data, provided by Eedi; *1/9/18 to 1/9/19; **1/9/19 to 20/3/20; two withdrawn schools excluded.*

[16] Teachers were not asked a specific question relating to whether they set up their own scheme of work, so this figure could be higher. From the theory of change and the training, it was assumed that each teacher was responsible for their own Eedi account.
[17] Eedi has now evolved to be Eedi School and a new product—Eedi Family—has been developed to specifically address the needs of parents and their children.

[18] **https://educationendowmentfoundation.org.uk/public/files/Projects/Evaluation_Protocols/EEDI_Protocol_2018.05.02_FINAL.pdf**

The mean number of assignments set per student varied considerably across the 77 intervention schools (see Figure 2). It ranged from 0 to 99 in Year 10 and from 0 to 37 in Year 11. Across the 77 schools taking part, the mean number of assignments per student decreased sharply from 27 in Year 10 to five in Year 11 (see Table 20).

Figure 2: Mean number of Eedi assignments set per student, per school, by academic year



Source: Eedi platform usage data, provided by Eedi; two withdrawn schools excluded.

Table 20: The overall mean number of assignments set per student, across schools, by academic year

Mean number of assignments set per student, per school	Year 10*	Year 11**
Number of schools	77	77
School-level mean	27	5
School-level SD	22	8
School-level Min	0	0
School-level Max	99	37

*Source: Eedi platform usage data, provided by Eedi; *1/9/18 to 1/9/19; **1/9/19 to 20/3/20; two withdrawn schools excluded.*

Following discussions with the developer, a minimum threshold of ten unique assignments, set within the platform per year, has been applied to the Eedi usage data. This is a conservative threshold that considers: time taken to set up Eedi at the start of the academic year; developer reports of usage varying over time depending on the stage in the scheme of work; and the trial finishing approximately two months early. Even when applying this conservative threshold, the data presented in Table 21 suggests that many teachers were not using Eedi as set out in the MoU. Only 54% of students in Year 10 and 14% of students in Year 11 were set ten or more Eedi assignments by their teacher.

Table 21 also shows that, of all the students included in the trial, only 25% (n = 3,462) of those in Year 10 and 4% (n = 534) of those in Year 11 completed more than ten Eedi assignments.

Table 21: Summary of minimum Eedi usage (as represented by ten or more assignments), per academic year

Student-level usage indicators	Year 10*	Year 11**
Total number of students in the trial	13,971	13,971
% of students set more than 10 assignments (n)	54% (7,527)	14% (1,940)
% of students started more than 10 assignments (n)	26% (3,631)	4% (576)
% of students completed more than 10 assignments (n)	25% (3,462)	4% (534)
% of students started more than 10 assignments, if set	48%	30%
% of students completed more than 10 assignments, if set	46%	28%

*Source: Eedi platform usage data, provided by Eedi; *1/9/18 to 1/9/19; **1/9/19 to 20/3/20; two withdrawn schools excluded.*

Full use of the Eedi platforms features

The teacher survey asked teachers in the intervention schools to rate the extent to which they were making full use of the platform. Of the teachers who responded to the survey, 6% (n = 10) of those teaching Year 10 and 3% (n = 2) of those teaching Year 11 reported making full use of the platform. Partial use of the platform was reported by 75% (n = 124) of Year 10 teachers and 69% (n = 42) of Year 11 teachers who responded to the survey (see Table 22).

The survey also asked teachers to indicate whether they had used or enabled selected functions, which are summarised in Table 23. Of the teachers who responded to the surveys, three quarters had connected their scheme of work in Year 10 (n = 125) and approximately half (54%, n = 33) had done so in Year 11. Using the Eedi platform to send your students a multiple-choice quiz at the end of a topic was reported by 62% (n = 103) of Year 10 teachers and 43% (n = 26) of Year 11 teachers.

Across both academic years, approximately half of the teachers were monitoring the student data provided by Eedi (Year 10: 48%, n = 79; Year 11: 49%, n = 30). Less than a third of teachers were setting follow-up questions to students based on their performance on the Eedi quiz (Year 10: 26%, n = 43; Year 11: 31%, n = 19). The use of the Eedi feedback setting was very low: only 7% of students in Year 10 and 1% of students in Year 11 received feedback from their teacher on the platform itself (see Table 24).

The Eedi platform data shows that the parental text feature was set up for 36% of students in Year 10 and 11% in Year 11 (see Table 25). Approximately one third of the teachers who responded to the survey had enabled the parental update function in Year 10 (37%, n = 62) and Year 11 (34%, n = 21).

Table 22: Teacher self-reported use of the Eedi platform

Overall, would you say that you are making full use of the platform (for example, by setting the specified number of quizzes, by using the feedback mechanisms, etc.)?	Year 10 teachers, March % (n)	Year 11 teachers, March % (n)
I am making full use of the platform	6% (10)	3% (2)
I am making partial use of the platform	75% (124)	69% (42)
I am not using the platform	19% (32)	26% (16)
Unsure	0% (0)	2% (1)
Total	100 (166)	100% (61)

Source: Teacher Survey 2; Teacher Survey 3.

Table 23: Teachers who indicated they had used or enabled different functions of Eedi

Eedi function	Year 10 teachers, March % (n)	Year 11 teachers, March % (n)
Connected your scheme of work to Eedi	75% (125)	54% (33)
Using the Eedi platform to send your students a multiple-choice quiz at the end of a topic	62% (103)	43% (26)
Set follow-up questions for students based on student performance in the multiple-choice quiz	26% (43)	31% (19)
Monitoring the student data provided by Eedi	48% (79)	49% (30)
Enabled the parental update function	37% (62)	34% (21)
I am not using the platform / Unsure	19% (32)	28% (17)

Source: Teacher Survey 2; Teacher Survey 3.

Table 24: Students who were set feedback in Eedi, by academic year

	Year 10* % (n)	Year 11** % (n)
% of students who were set feedback in Eedi (n)	7% (948)	1% (148)

*Source: Eedi platform usage data, provided by Eedi; *1/9/18 to 1/9/19; **1/9/19 to 20/3/20; two withdrawn schools excluded.*

Table 25: The number of students with parental text feature enabled, by academic year

	Year 10* % (n)	Year 11** % (n)
% of students whose parent received an Eedi-related text	36% (5090)	11% (1601)

*Source: Eedi platform usage data, provided by Eedi; *1/9/18 to 1/9/19; **1/9/19 to 20/3/20; two withdrawn schools excluded.*

Enablers and barriers to implementation

The Eedi usage data is provided for the whole sample of students taking part in the trial. This clearly shows that the dose of implementation was much lower than anticipated. The reason for this noncompliance is not clear as the process evaluation also had a low level of compliance. The teacher survey and requests for case study visits were met with a low level of engagement. We speculate that the relatively high self-report figures in Table 22 show that the teachers who responded to the evaluation survey are a small subset of teachers who used Eedi. The extent to which this group can tell us about those who did not comply is limited. Nevertheless, technical issues with the programme were widely reported amongst the survey sample and it assumed that these also extended to the wider user base. These are explored in more detail below.

Technical issues with the Eedi platform that impact students

One of the main barriers to implementation identified in the surveys and case studies was technical issues with the platform. Several groups of students reported technical issues that interrupted their use of Eedi. In total, across all the qualitative data sources provided by both teachers and students, there were over 130 references to technical issues with the Eedi platform. The main issues reported were the platform crashing when students used it, problems for students logging in, the lack of flexibility for teachers, and problems with the parental update function.

These technical issues were considered to influence the degree to which the students engaged with the intervention. There were 25 references to technical issues having a negative impact on student engagement as illustrated by the following quote:

‘They [students] don't seem to like it very much. They get frustrated with the technical problems. A few students have said they would prefer written homework.’ (Year 10 teacher, March 2019 survey)

Issues with the parental update function

In five of the case study visits, students or teachers reflected on problems with the parental update function, usually in relation to a technical issue. For some learners, the text message updates incorrectly reported missing homework; for others, the messages reported a score of zero when they were unable to access Eedi due to technical difficulties with the platform, as illustrated by the following quotes:

‘My mum gets messages saying I haven’t done my quizzes when I’ve done all of them.’ (Year 10 student, Case Study 1, student focus group 2)

‘My science teacher has a kid in our year and she keeps getting notifications that she’s not improved over the last few weeks, and that’s because she keeps getting 100%.’ (Year 10 student, Case Study 6, student focus group)

‘The texts are always negative saying, “Your child’s got this many wrong,” and whatever. But then if the site’s gone down for, say, a week or summat, you've not been able to do it at all, no matter how many times you try, they'll still send a text saying, “You got nothing right,” when even you haven’t done it, because you can't do it.’ (Year 10 student, Case Study 7, student focus group)

A small number of students reported that they were not believed by their parents or teachers in terms of the technical issues that they were experiencing, and some teachers reported that they found it difficult to ascertain whether students were telling the truth.

‘You're stuck in the middle, because your parents don't believe you it's gone down and your teachers don't believe you it's gone down, so you get a detention, and you get a rollicking when you get home.’ (Year 10 student, Case Study 7, student focus group)

‘It's full of glitches, which as a teacher makes it problematic because the students pick up on those and start using them as excuses, so I don't know whether it's a genuine ... yes, it's crashed, or they just haven't put the effort in. So, I would say it's actually increased my workload in terms of chasing up homework.’ (Year 10 teacher, Case Study 1)

There were also a small number of reports of parents blocking or disliking Eedi due to its informal approach (using parental first names and messaging over the Christmas period). In addition, there were a small number of reports from students of inconsistencies in how the Eedi parental updates were functioning within families—for example, where Eedi updates were sent for one child but not another, or to only one of two parents who were separated.

Other reasons for lack of teacher buy-in

Other reasons for a lack of teacher buy-in include:

- Some students were not using it properly (examined in more detail later in the report): ‘We haven’t had a very good take-up with the teachers across the board in the department, and the ones that have taken it up, the uptake of the students has been limited and they’re reluctant to use it. I think they’re happy to use the multiple-choice bit, but they’re not as keen for their written answers. At the moment, getting them to do their written answers is a bit of a problem for some teachers.’ (Eedi lead, Case Study 5)

- Some teachers believed it did not reduce their workload: ‘They [the teachers] know they have to do it, but if they had a choice they would scrap it and do something different. It’s not reduced workload because of kids struggling with different elements and them not knowing how to sort it out.’ (Eedi lead, Case Study 1)

- One Eedi lead speculated that some teachers are reluctant to use an online platform and a handful of survey responses echoed this: ‘I think there’s a slight mix between teachers who are more happy to get online feedback and work on an online system, whereas some like more of a classical book approach and they don’t sit comfortably with the fact they’re not writing lots of things in a student book. I know some teachers do that as well, so they mark Eedi and they also mark the book because it doesn’t feel right.’ (Eedi lead, Case Study 6)

- In several case study schools, the Eedi lead set up the Eedi accounts for all the teachers in their department. On the one hand, this may cut down on the time needed by individual teachers to sync their scheme of work. However, on the other hand, it could be speculated that teachers were not actively engaged with Eedi from the outset, which made it easier to disengage later. Disengagement could be triggered if the teacher’s lessons did not match with the scheme of work timetable and if the teacher did not set up their own scheme of work, they may find it difficult to implement changes.

It is important to note that Eedi is commercially available outside this trial and has a relatively large userbase (100,000 users, including students, cited on the Eedi website in July 2021). This suggests that teachers may be more likely to use Eedi if they specifically seek it out rather than because their school is taking part in a trial.

IPE research question 2: What constitutes ‘usual practice’ in the intervention and control schools, and does this change over the duration of the trial? Are control schools using similar interventions to Eedi that might be considered close substitutes for it?

Using Eedi to identify misconceptions

A key feature of Eedi is that it aims to help teachers identify student misconceptions in their maths homework. Of the teachers who reported making full or partial use of Eedi, 64% (n = 85) of those teaching the trial cohort in Year 10 and 80% (n = 35) of those teaching them in Year 11 reported that this was the case. This suggests that amongst the small number of teachers who engaged with the evaluation survey, there is some evidence that the platform was achieving this aim. We cannot, however, ascertain whether this is the case for the teachers who did not respond to the evaluation.

Table 26: Does Eedi support teachers in identify student misconceptions in their maths homework

Does Eedi support you in identifying student misconceptions in their maths homework?	Year 10 teachers, March % (n)	Year 11 teachers, March % (n)
Yes	64% (85)	80% (35)
No	17% (23)	7% (3)
Don't know	19% (25)	14% (6)
Total	100% (133)	100% (44)

Source: Teacher Survey 2 and Teacher Survey 3 (teachers who reported making full or partial use of the platform).

The March Year 10 teacher survey asked the teachers who reported that Eedi had supported them in identifying a misconception to provide some insight into the action they took as a result. The 75 qualitative responses could be grouped almost exclusively into three actions (some teachers provided multiple responses so the percentages do not sum to 100):

1. addressing the misconception during a subsequent lesson (n = 52, 69%);
2. providing feedback in the Eedi platform (n = 16, 21%); and
3. providing individual learner feedback (n = 10, 13%)

This highlights that not all teacher feedback actions leave a digital footprint in the Eedi platform.

Teacher use of alternative maths homework platforms

Schools taking part in the trial agreed not to use Eedi if they were selected to be in the control group, and Eedi restricted access for the duration of the trial (by blocking any accounts held by teachers in the trial). There was however, no stipulation that schools in either the control or intervention arms of the trial could not use another maths homework platform. The evaluation examined the use of other online maths platforms via the teacher survey; students also provided some comparisons between Eedi and the other maths homework platforms that they were familiar with.

Across the trial, the percent of respondents using another online maths homework platform ranged from 61% to 69% in control schools, and from 49% to 70% in the intervention schools (see Table 27).

Table 27: The percentage of teachers who reported currently using an online maths homework platform with their Year 10 or Year 11 students

Survey	Intervention % (n)	Control % (n)	Total % (n)
Year 10 teachers, December**	53% (110)	66% (200)	61% (310)
Year 10 teachers, March**	49% (82)	69% (193)	62% (275)
Year 11 teachers, March***	70% (42)	61% (110)	63% (152)

Source: Teacher Survey 1; Teacher Survey 2; Teacher Survey 3.

***Do you currently use an online maths homework platform, other than Eedi,[19] with Year 10 students?*

****Do you currently use an online maths homework platform, other than Eedi, with Year 11 students?*

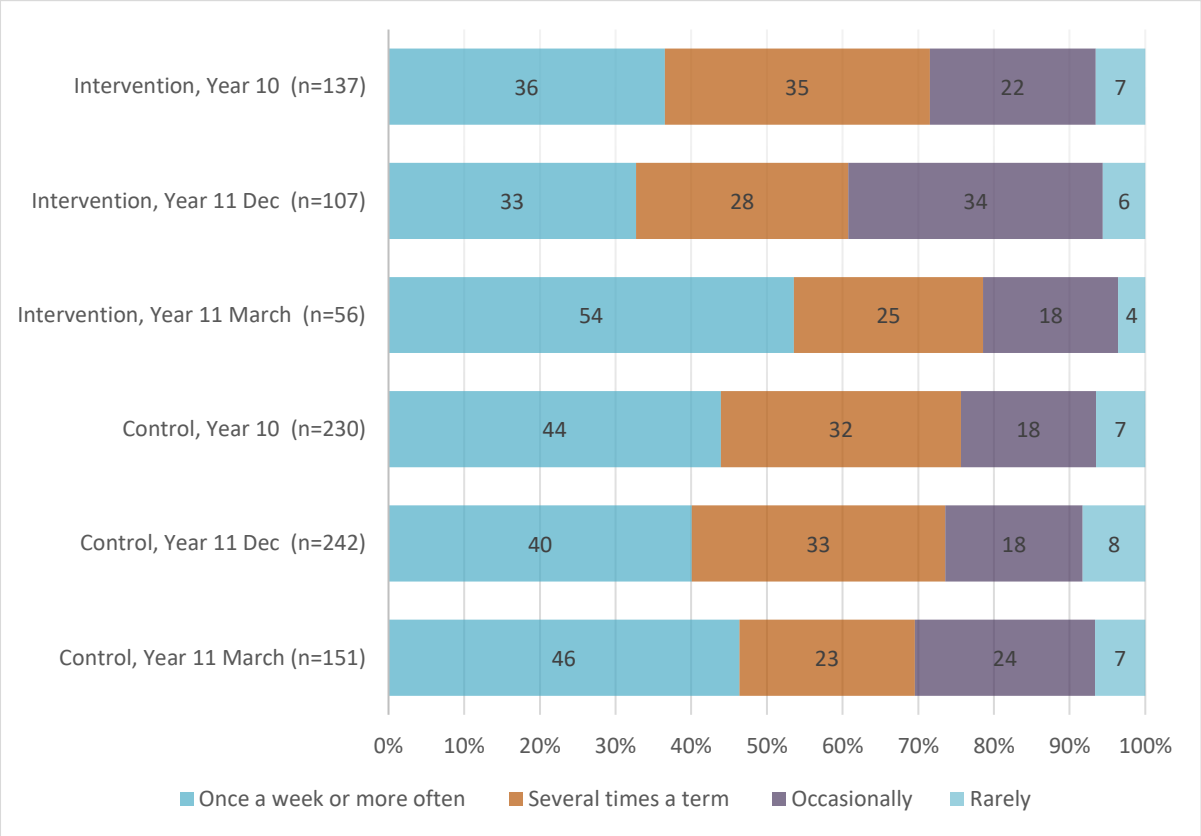
Across all four teacher surveys, Maths Watch, MyMaths, and Hegartymaths were the maths platforms most frequently cited by the teachers in the control and intervention groups. On average, these platforms accounted for over 80% of the cited platforms used by teachers in both the control and intervention schools. When a maths homework platform was used by a teacher, it tended to be used either weekly or several times a term (see Figure 3). The teachers who reported using another maths homework platform were asked to indicate whether a selection of Eedi functions were available or had been used on the platform they were using for maths homework with the trial cohort. Table 28 shows that over half of the teachers who responded to this survey question reported that the non-Eedi maths homework platform helped them to identify student misconceptions.

The concurrent use of alternative platforms that offer some of the features of Eedi is potentially confounding as it may be difficult to disentangle the impact of the different platforms on student attainment and teacher workload. The relatively similar prevalence of the use of maths homework platforms in both arms of the trial may potentially facilitate the

[19] Note: 'other than Eedi' was not included in the question in the control schools' version of the survey.

evaluation in so far as they are 'balanced'. The use of homework platforms could indicate uptake of homework in general, which is potentially a confounding variable that we do not account for.

Figure 3:The frequency with which teachers use other maths homework platforms



Source: Teacher Survey 1; Teacher Survey 2; Teacher Survey 3. Teachers can use more than one platform; this figure presents the total across all platforms cited by teachers.

Table 28: Features of other maths homework platforms used by teachers in the trial

Features of other maths homework platform	Intervention, Year 11 % (n)	Intervention, Year 10 March % (n)	Intervention, Year 10 Dec % (n)	Control, Year 11 % (n)	Control, Year 10 March % (n)	Control, Year 10 Dec % (n)
Connects to your scheme of work	12% (5)	18% (14)	18% (20)	17% (18)	16% (30)	17% (34)
Sends your students a multiple-choice quiz at the end of a topic	21% (9)	17%% (13)	12% (13)	16% (17)	7% (14)	7% (14)
Sends your students a multiple-choice quiz three weeks following the end of a topic	10% (4)	11% (9)	7% (8)	5% (5)	2% (3)	0% (0)
Sets follow-up questions for students based on student performance in the multiple-choice quiz	38% (16)	32% (25)	20% (22)	22% (24)	18% (35)	18% (35)
Helps you identify student misconceptions	60% (25)	63% (50)	51% (56)	64% (70)	56% (108)	53% (105)
Sends you alerts on student completion	40% (17)	29% (23)	28% (31)	27% (29)	26% (49)	26% (52)
Sends parents updates	10% (4)	6% (5)	4% (4)	2% (2)	3% (5)	2% (3)

Source: Teacher Survey 1; Teacher Survey 2; Teacher Survey 3. Question asked: 'Please indicate whether the following functions are available/have been used on the online platform you use for Y10/Y11 [survey specific] maths homework.'

IPE research question 3: To what extent has the programme changed the working environment and/or pedagogy of teachers in the intervention schools?

Changes to the working environment and/or pedagogy

The logic model flagged six key areas where a positive change could occur as a result of using Eedi: maths homework completion rate; students' understanding of common misconceptions in maths; students' general engagement with maths; attainment in maths; teachers' confidence in addressing misconceptions in maths with students; and parental awareness or engagement with their child's maths learning. Year 10 and Year 11 teachers were asked to rate any changes, and the responses are presented in Figure 4, which suggests that a large proportion of teachers (in both Year 10 and Year 11) reported no change (56% in Year 10 and 53% in Year 11) or a minor positive change (34% in Year 10 and 40% in Year 11).

In terms of the primary outcome of interest—maths attainment—81% (n = 87) of the Year 10 teachers and 69% (n = 27) of the Year 11 teachers (who responded to the survey and were using Eedi) reported that they had not noticed a change in their students' maths attainment over and above what they might have expected from a Year 10 or Year 11 cohort at this stage in the year.

Only a minority of teachers reported that there had been a major positive change in any one of the six areas—7% of Year 10 and Year 11 teachers reported a major positive change in their confidence in addressing misconceptions in maths with their students.

There were some reports amongst the survey respondents of minor and major negative changes to maths homework completion rate, mainly in Year 10 where 11% (n = 14) reported a major negative change and 15% (n = 18) reported a minor negative change. However, on balance, 27% reported a minor positive change and 6% a major positive change to homework completion in Year 10.

Parental awareness and engagement

The Eedi usage data shows that approximately one third of parents were sent an Eedi-related text in Year 10 and 11% in Year 11. The developers found that many schools were reluctant to share parent data in the context of the introduction of GDPR in May 2018.

Most of the teachers who had enabled the parental text feature were agnostic about its uptake. The vast majority of teachers had not spoken to parents directly about the Eedi text updates and the small number who had noted a low level of parental engagement. The teachers do not actually see or type the message as it is automatically generated, so they are a step removed from this aspect of Eedi.[20]

'I've sent about five or six emails out to all the Year 10 parents, just kind of introducing it, explaining what it is. I haven't had a lot of feedback from the parents because they're probably sick to the back teeth of getting emails from school generally. But it's meant that we're giving them a lot more information potentially that they've got a lot more ways of finding out how the students are getting on. They get texts from [Eedi] saying when their kids have missed a homework. By the number of kids that have still not got caught up on that I'm guessing that either the parents have now blocked on that or they just don't care enough to do anything about it.' (Eedi lead, Case Study 4)

43% of the Year 10 teachers who responded to the survey reported a minor positive change in parental awareness or engagement. Only 1% in Year 10 and 3% in Year 11 reported that they had noticed a major positive change.

Teacher workload

The case study visits and open-ended survey questions explored whether teachers considered that Eedi had changed their homework-related workload. The responses were mixed: of the 50 comments coded, approximately half reported that Eedi had reduced the time required to prepare homework—for example, one teacher noted that 'once [Eedi is] set

[20] During lockdown, Eedi created a feature to allow teachers to message parents directly.

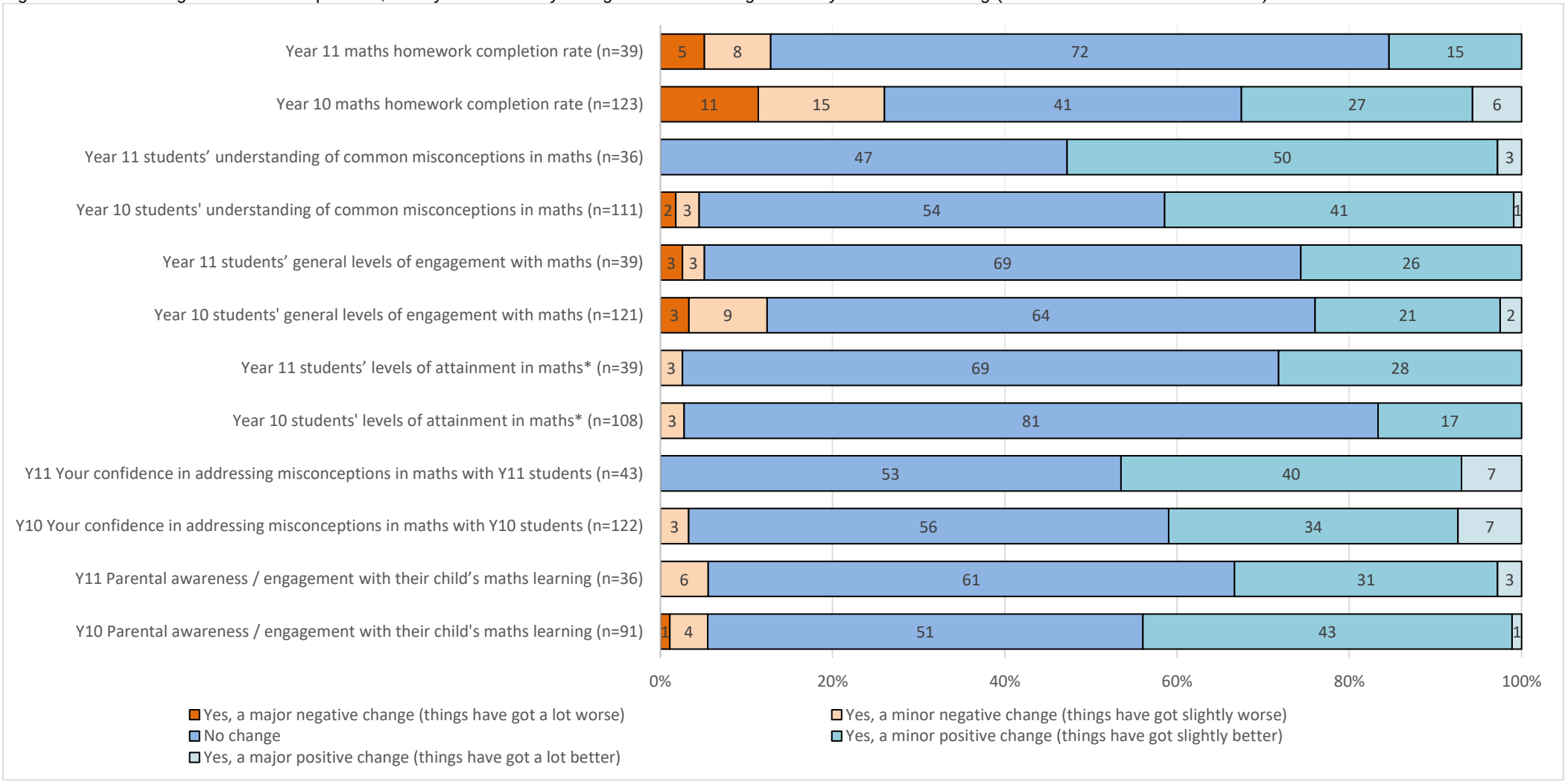
up you do not have to worry about finding and setting appropriate tasks for homework each week' (March 2019 teacher survey).

However, during the case study visits five teachers noted that whilst the time required for setting homework had decreased, they were still spending time chasing student homework. One teacher noted that it was sometimes more difficult to check online homework compared with work completed in written books.

'I do feel like it's provided me with a different workload which isn't as big, and it hasn't reduced it as much as I'd like because I have to chase students who aren't doing it. I'd do that with homework anyway but it's a bit clearer when I open their books that their homework isn't there, but I've got to log on and check and especially when I've got to check that they've responded to the feedback, it's really difficult.' (Teacher, Case Study 6)

Whilst Eedi automatically marks the quiz, the teacher may choose to read the reasoning box and provide feedback. There were numerous reports of Eedi being burdensome in terms of providing learners with individual feedback, which teachers found time consuming to type. For example: 'It is time consuming when writing the feedback and not user friendly' (Dec 2018 teacher survey). This suggests that whilst Eedi may reduce some homework activities, it does not reduce them all.

Figure 4: Since starting to use the Eedi platform, have you noticed any changes in the following areas of your maths teaching (for the current Y10 or Y11 cohort)?



Source: Teacher Survey 2; Teacher Survey 3 (teachers who reported making full or partial use of the platform). 'Don't know/can't say' responses have been treated as missing.'

**Over and above what you might have expected from a Y10|Y11 cohort at this stage in the year.*

IPE research question 4: What are intervention school teachers' perceptions of how and why the programme is making a difference, if at all, and to what extent might this be different depending, for example, on student groups?

The process evaluation data suggests that some students were not engaging with the Eedi platform as intended, which would limit the extent to which it can make a difference to the attainment of the students using it. Specifically, there were extensive reports of students guessing the answers and students not using the reasoning box to display their workings or logic behind their answer.

Guessing the Eedi quizzes

There were over 60 teacher survey comments speculating that their students were potentially guessing the answers of the Eedi multiple-choice questions. This was echoed in four of the seven focus groups, which involved discussions of repeatedly guessing the answers to the quizzes. The learners reported that this was happening for several reasons:

- In one focus group, the learners found the questions too difficult and so guessed the answer. This links to other themes identified in the data—in particular, there were 17 teacher comments that the questions were too difficult for lower ability students. Furthermore, many learners reported that they would have preferred Eedi to feature instructional or recap videos before the quiz to allow them to review the content.

- Learners in two of the focus groups reported that their guessing was driven by the desire to complete the homework as quickly as possible. In one case, this was because of a backlog of quizzes that had built up due to the lack of reminders to notify learners to complete the quiz.

- Students in two focus groups reported a general level of 'boredom' with Eedi, which meant that they did not want to engage with the homework.

Students guessing an answer is not unique to Eedi, but it is a problem in this instance because it is likely to result in an inaccurate picture of class-level misconceptions and therefore cannot help teachers decide how to adjust their teaching. It may also negatively impact on student attainment as these students are not learning the mathematical content.

The Eedi reasoning box

The free text teacher survey responses suggested that teachers found it useful when students completed the reasoning box provided next to each Eedi question where the student can document the logic or workings behind their answer. Nevertheless, students in all seven focus groups discussed not using this feature of Eedi, for various reasons:

- Three groups of learners reported that Eedi did not have the mathematical symbols they needed so they were unable to accurately capture their workings.

- Linked to this, three groups reported using scrap paper alongside Eedi but discarding their workings before their teacher could see them.

- Other groups (n = 3) omitted this aspect of Eedi to save time, and some reported that they either didn't know what content to put in or were disengaged and chose to skip it.

Other maths homework platforms

During six of the seven student focus groups, several learners reported preferring alternative maths homework platforms—Hegarty Maths was referred to in four focus groups and Maths Watch in two. The primary reason cited by students for preferring to use these alternative platforms was that they offered instructional videos that the students considered to be absent from Eedi. Eedi provides videos once the quiz has taken place, but students were keen to recap learning before the quiz.[21]

[21] This is deliberate as the purpose of Eedi (now Eedi School) is to identify whether students still hold misconceptions after being taught a topic by their teacher. To provide videos before they answer the questions would undermine that objective.

Student 1: 'Before Eedi, we used something called Hegarty Maths.'

Student 2: 'That's better.'

Student 1: 'Hegarty Maths is really good.'

Student 1: '[Eedi] seems like a more worse version of Hegarty maths because Hegarty maths has the quizzes and it has clips where it shows you how to do it, whereas Eedi just has quizzes.' (Case Study 1, student focus group)

Several students argued that in their opinion, Eedi served a testing but not a teaching function. One could argue that this may be beyond the functionality intended by Eedi so is an unfair criticism; however it does indicate what students expect in terms of usual practice.

'In a way it's [Eedi is] not really a learning facility, it's like we only have it when you have exam feedback. So, if you're supposed to learn, when we have quizzes to have exam style questions we got wrong, we do them again on Eedi but if you are learning new you just go to Hegarty again, so we learn it from Hegarty and we come back to Eedi to answer the question.' (Case Study 10, student focus group)

There were also several teacher comments referring to students' preference for the video and tutoring functions of alternative platforms.

'Students state the lack of tutorial compared to Hegarty is a barrier to engagement.' (Year 10 teacher, free text survey comment)

'They prefer MyMaths and they didn't like it before. We are all frustrated you can't watch the video/get help in between the first and second attempts (my class has the weakest students in Year 10).' (Year 10 teacher, free text survey comment)

Across all the student focus groups, there was a general lack of awareness of Eedi's features, thus even when some features existed, the learners were not using them.

Student engagement with the Eedi platform

Positive student engagement with the Eedi platform was reported in five student focus groups, five teacher interviews, and a handful of teacher survey comments. One group of students reported liking the style of the 'proper exam questions'. Another group reflected on the ease of completing the multiple-choice questions, and another on the misconceptions feature. There were also 15 short survey responses from Year 10 teachers indicating partial engagement amongst their students—for example, engaging with it in a classroom setting. Nevertheless, the teachers also identified three groups, each flagged over 20 times, who were least likely to be engaging with Eedi.

The first group was of students who were generally disengaged with all homework and for whom Eedi was no exception.

'Some students just hate homework and it doesn't matter what it looks like, they've got to do it at home and they're not interested.' (Year 10 teacher, Case Study 7)

'The ones that engage with it [Eedi] are the sort of ones that engage with anything and do their homeworks anyway. It's made it easier for the ones that don't engage and just guess to get away with doing nearly nothing. And therein lies the issue.' (Year 10 teacher, Case Study 1)

The secondly group of students who were least likely to engage were those for whom the Eedi questions were too difficult. These students often reported that they found the platform to be demotivating.

'Some [students] become disengaged if the questions are too difficult.' (Year 11 teacher, survey comment)

The third group of students struggling to engage were those without access to a computer at home. Some teachers had tried to provide students with access to computers at school to remove this barrier to engagement, but this was not always possible as maths lessons typically do not take place in an IT suite and Eedi is intended as a homework task.

> *'The ones who are higher ability, who've got the nice middle-class parents who are very supportive … they're getting it done. And they're probably sat at home on home computer ... doing it in comfortable circumstances, being brought a cup of tea halfway through. Whereas the kids who are from the rough end of [location] who come here ... if they're doing it, they're doing it in school or they're doing it on their phone on the way into school or something like that. They've not got that comfortable surroundings to do a piece of electronic homework.' (Year 10 teacher, Case Study 4)*

High-quality questions

It is important to note that there were approximately 20 positive comments relating to the quality of the questions provided by the Eedi platform. These comments arose in four of the case study visits. When asked what Eedi functions they find useful, there were ten survey comments from Year 10 teachers and five from Year 11 teachers praising the quality of the questions.

> *'They're just really well written questions, and it takes away us having to write the questions.' (Eedi lead, Case Study 1, teacher interview)*

IPE research question 5: How and why does the implementation of the programme vary? To what extent does any variability affect the achievement of expected outcomes?

The main way in which the implementation of Eedi varied was the frequency with which teachers set Eedi homework quizzes. This is documented under IPE research question 1. The evaluation was unable to ascertain why teachers did not use the platform on average twice a week as planned, as many of the teachers in intervention schools did not engage with the evaluation activities. Based on the teachers who did engage in the evaluation survey, we hypothesise that teachers reduced their implementation of Eedi for one or more of the following reasons:

- technical issues with the platform;
- students guessing quizzes and not using the reasoning box;
- lack of teacher buy-in;
- burdensome feedback mechanism; and
- students preferring alternative platforms.

A second area of potential variation was in terms of teacher actions in response to the Eedi homework (as reported under IPE research question 2). The data suggests that teachers:

- provided individual feedback in the platform; and
- gave students feedback outside the Eedi platform—for example, they may have a recap session in the classroom.

The latter does not leave a digital footprint so could mean the formative feedback was likely to have been more frequent than the platform data suggested. A diagnostic question has three incorrect answers, each designed to highlight common misconceptions. A teacher may identify which of these has been chosen by their students and address each in class. Provided the teacher discusses all three incorrect answers to all questions, each individual student will see their specific misconception addressed. However, given lesson time constraints, teachers may choose to focus on the most frequently flagged misconceptions, thus potentially not addressing the misconceptions held by an individual student. This could have had an impact on the expected student outcomes, but because this part of the impact evaluation was not possible, this idea cannot be worked through in its entirety.

Cost

The costs to the schools delivering Eedi are summarised in Table 29.

Table 29: List of resources required by Eedi

Category	Item
Personnel for preparation and delivery	All Year 10 maths teachers set up their scheme of work in Eedi. All Year 10 maths teachers use Eedi with Year 10 students. All Year 10 maths teachers set up parent text function. All Year 11 maths teachers set up their scheme of work in Eedi. All Year 11 maths teachers use Eedi with Year 11 students. All Year 11 maths teachers set up parent text function.
Personnel for training	All Year 10 maths teachers attend on-site Eedi-led training session in Year 10. All Year 11 maths teachers attend on-site Eedi-led training session in Year 11.
Training and programme costs	School pays for Eedi-led training session in Year 10 and refresher session in Year 11.
Facilities, equipment, and materials	School pays for Wonde sync with Eedi. School provides computer access for students unable to access Eedi at home. Students are able to access smartphone or computer to use Eedi. Parent pay to access Eedi updates.

Over the duration of a two-year GCSE course, schools typically receive two on-site training sessions, one at the beginning of each academic year. The sessions are to be attended by all maths teachers due to use Eedi that year. Training is normally delivered during departmental meeting times or after school, so cover is not usually required—only one school reported requiring teacher cover.[22] The training was estimated (by the Eedi leads who completed Survey 3) to take two hours in Year 10 and one hour in Year 11.

The final teacher survey asked the Eedi lead at each school to estimate the set-up time per teacher, per year. 19 of the Eedi leads completed the survey and their responses are summarised in Table 30. Whilst responses were provided by only 30% of the Eedi leads, the estimates are broadly in line with the estimates provided by Eedi. Table 30 shows that setting up the scheme of work was estimated to be the most time-consuming task, taking an estimated average of four hours in Year 10 and two hours in Year 11. The parental function was estimated to take one hour in Year 10 and less than one hour in Year 11, although the Eedi usage data, teacher surveys, and case studies suggest that not all schools used the parental function. Other preparation activities took an additional two hours in Year 10 and one hour in Year 11.

No additional staff time is required in terms of the day-to-day delivery of Eedi as the setting and marking of homework take place under business-as-usual activities in existing working hours. The Eedi quizzes are set automatically once the scheme of work is aligned to Eedi. Teachers are expected to review students' answers to the Eedi quiz as they would usually review homework—this is itself a secondary outcome measure of the trial.

Table 30: Total time devoted by personnel for preparation and delivery

		Year 1	Year 1	Year 2	Year 2
	Teacher type	Number of teachers	Mean number of hours		
Preparation					
Syncing Eedi to the scheme of work	Maths teachers	All responsible for Year 10	4 hours (n = 19) min 1 – max 10	All responsible for Year 11	2 hours (n = 19) min 0 – max 10
Setting up the parental function	Maths teachers	All responsible for Year 10	1 hour (n = 18) min 0 – max 5	All responsible for Year 11	0 hours (n=17) min 0 – max 4
Other preparation activities (excluding training)	Maths teachers	All responsible for Year 10	2 hours (n = 19) min 0 – max 10	All responsible for Year 11	1 hour (n=19) min 0 – max 3
Delivery	Maths teachers	All responsible for Year 10	0	All responsible for Year 11	0

Source: 4th Teacher Survey. Time estimated by the Eedi lead and rounded up to the nearest hour.

There is no fee for teachers or students to use Eedi, but at a school level there are set-up fees for on-site training (£300) and for syncing Eedi with the school information management system Wonde (£100). These are both charged once at the beginning of year 1—they are not reoccurring costs. These are school-level costs and do not vary depending on the number of students using Eedi per school.

Parents are each charged £3.99 per month to receive Eedi updates on their child's performance. If a child is eligible for FSM, Eedi do not charge the parent for this service.

[22] This was reported in the third survey. There were no reports of teacher cover in any of the case studies.

Table 31: Cost of delivering Eedi

Item	Type of cost	Cost	Total cost over 2 years	Total cost over 3 years**	Total cost per student per year* over 2 years	Total cost per student per year* over 3 years**
Personnel	N/A					
Personnel for training	Teacher cover	£0	£0	£0		
Wonde sync for automated class management	Start-up, one-off cost per school, paid to Eedi	£100	£100	£100		
On-site training	Start-up cost per school, paid to Eedi	£300	£300	£300		
Parent costs per child	Running cost per student directed to the parent, paid to Eedi	£3.99 per parent per month, free for FSM	£3.99 x 10 (months) x 2 (years) = £79.80	£3.99 x 10 (months) x 3 (years) = £119.70		
Total					£40.94	£40.59

*The average number of students per year per school is estimated to be 193 based on the 2019 school census, which estimates that there are on average 965 students per secondary school (Department for Education, 2019a).

**The cost per student per year over three years is provided to allow for comparisons with other EEF evaluations.

There were no recurring costs for schools taking part. Schools were not required to purchase equipment that they would not normally be using under business-as-usual assumptions.

Conclusion

Key conclusions
1. Due to Covid-19, the primary outcome for this evaluation was not collected and so no measure of impact on maths attainment is reported. Key conclusions are based on qualitative data from the implementation and process evaluation. There was some evidence that Eedi reduced teachers' homework-related workload as reported in approximately half of teachers' responses in school visits and survey questions. Teachers responding to the survey in intervention schools noted an average reduction in their workload of 28 minutes per week, compared with teachers responding in control schools.
2. Further exploratory analysis showed that students who were eligible for free school meals were less likely to start or complete an Eedi quiz compared with students who were not eligible. The parents of students who were eligible for free school meals were also less likely to log into the Eedi platform compared with parents of children who were not eligible.
3. Teachers did not set the Eedi homework quizzes as frequently as intended. Students were set an average of 25 quizzes in Year 10 and four quizzes in Year 11, compared with expected figures of approximately 80 quizzes in Year 10 and 52 in Year 11. The low dosage limited the ability of Eedi to deliver its intended benefit as a formative assessment tool.
4. Reports from teacher surveys and from students (in four of seven focus groups) suggested that students were guessing answers to their Eedi homework due to the difficulty of questions, the desire to complete homework quickly, and a lack of engagement. Teachers reported finding it useful when students completed the reasoning box to document their workings; however, students reported not using this feature.
5. The parental update function was enabled for 36% of students in Year 10 and 11% of students in Year 11. Of the teachers who responded to the survey, only 1% in Year 10 and 3% in Year 11 reported that they had noticed a major positive change in parental awareness or engagement with their child's maths learning; 43% of Year 10 teachers and 31% of Year 11 teachers who responded to the survey reported a minor positive change.

Impact evaluation and IPE integration

The schools taking part agreed that their maths teachers would set an average of two Eedi quizzes per week, equating to approximately 80 quizzes when the students were in Year 10 and 52 when the students were in Year 11. The Eedi platform data shows that the mean number of quizzes set per student was 25 in Year 10 and four in Year 11. This suggests that the dose of Eedi received by students was much lower than intended. Within the theory of change model, the outputs capture an interactive process of quiz setting by teachers and quiz completing by students, but this did not always occur and when either party stops, the intervention ceases to take place. The purpose of the intervention was to deliver regular formative feedback in relation to maths quizzes addressing a specific topic. When the quizzes were not set or completed, this did not happen. Given the implementation did not occur as intended, it was not possible to scrutinise the theory underpinning the theory of change. There was no evidence to suggest that, if the Eedi platform was used as intended by both teachers and students, then the model would hold.

Positive student engagement with the Eedi platform was reported in five student focus groups and many teachers praised the quality of the questions. Nevertheless, the focus groups and evaluation suggested that there was widespread guessing amongst students. Many learners were not engaging with the platform but skipping through the quizzes as quickly as possible. This undermines the ability of Eedi to be able to diagnose any particular misconceptions based on the answers selected by students in the Eedi platform.

There were also reports that students were frequently not using the reasoning box, which prevents teachers from accessing additional information that might help them to understand a student's response.[23] Nevertheless, there were reports from teachers who responded to the survey that Eedi (and the other platforms they used) supported them in identifying student misconceptions (64% in Year 10 and 80% in Year 11 reported that Eedi supported them in identifying student misconceptions in their maths homework).[24] Teachers reported addressing misconceptions during a subsequent lesson or in the platform itself. (Guidance from the EEF (2021) highlights the principles, methods, and implementation

[23] The absence of reasons does not prevent teachers from identifying misconceptions as these are generated from the diagnostic questions.

[24] This potentially provides further evidence that the survey sample is a sub-group of teachers who engaged with Eedi. It is notable that the figure is higher in Year 11 compared with Year 10, again suggesting that teachers may stop using Eedi if it is not supporting their work.

of teacher feedback.) Whilst Eedi can form part of the feedback students receive about their maths attainment, the teachers are not bound to providing written feedback in the platform.

EEF guidance recommends that schools implement a feedback policy that prioritises and exemplifies the principles of effective feedback. Each school's feedback policy was discussed with Eedi and the project lead to advise the best use of the feedback feature. This was not investigated during the present study.

It is difficult to ascertain whether the feedback provided by teachers had an impact on students' maths comprehension, and the evaluation did not establish the extent to which the teachers were providing very focused feedback or recapping the topic more generally. The evaluation suggested that the vast majority of the teachers were not fully using the platform (only 6% of teachers in intervention schools who responded to the survey in Year 10 and 3% who responded in Year 11 reported that they were making full use of the platform), so it stands to reason that they were not fully using the diagnostic or feedback capabilities of Eedi.[25] An earlier EEF trial examining the impact of Embedding Formative Assessment found that, whilst the intervention had a positive impact on students in their Attainment 8 score, it did not show evidence of subject-specific gains for maths or English, which suggests that gains at a finer grain may be difficult to detect or absent.

Data from the whole student cohort (not just the teachers who responded to the survey) suggests that the wider teacher population involved in the trial was not addressing misconceptions identified by Eedi. Eedi sets two quizzes on the same topic three weeks apart. A comparison between student performance on Quiz A and Quiz B suggested that the level of improvement was minimal, with students not answering more questions correctly in the second quiz compared with the first. This suggests that feedback in between the quizzes does not challenge misunderstandings or encourage conceptual development, as per the guidance proposed by Best Evidence Science Teaching (2016). It could also suggest that there was a lack of engagement with the feedback provided or that learners forgot the content.

Students eligible for free school meals (FSM) (compared with those who were not) were found to be less likely to start or complete an Eedi assignment or resolve a mistake, and the parents of students eligible for FSM were less likely to log into the Eedi platform compared with parents whose children were not eligible. The process evaluation suggested that students who were generally disengaged, those who were lower attaining, and those from disadvantaged backgrounds were less likely to engage with the platform. Whilst there were many potential reasons for not engaging with the Eedi platform, it is notable that there may be some parallels with the concerns raised during the Covid-19 lockdown that students from disadvantaged backgrounds were facing difficulties accessing remote learning resources (Nuffield Foundation, 2020; Children's Commissioner, 2021). This finding also contrasts with the mission of the EEF to break the link between family income and educational achievement. Given the large number of maths homework and revision platforms available, further research could unpick this for the whole suite of platforms, of which Eedi provides one option.

The proportion of students in a school for whom English was an additional language was significantly associated with a decrease in the number of assignments set, started, and completed per student. Whether a student spoke English as an additional language was only provided and analysed as a school-level variable. Further analysis could investigate the extent to which this demographic variable impacts on student engagement with online homework platforms such as Eedi.

The qualitative evidence suggesting that some lower ability students were less likely to engage with Eedi could also be unpicked with further research. This could be particularly relevant when one considers teachers are raising concerns about difficulties that many children with dyslexia have encountered with virtual learning during the pandemic, with calls for further research to assess how students with dyslexia are engaging with online platforms such as, but not limited to, Eedi (Derbyshire, 2020).

One of Eedi's key potential benefits, and a reason for the EEF funding the trial, was the ability of the platform to automatically update parents on their child's performance on the platform. The Eedi platform data suggests that this feature was only enabled for 36% of students in Year 10 and 11% of students in Year 11. The process evaluation suggests that this was lower than anticipated partly due to the introduction of GDPR legislation, which schools were still navigating at the time of the trial. Of the teachers who responded to the evaluation, only 1% in Year 10 and 3% in Year 11 reported that they had noticed a major positive change in parental awareness or engagement with their child's maths learning. More teachers reported a minor positive change (43% in Year 10 and 31% in Year 11), but given that the

[25] Partial use was reported by 75% of survey respondents in Year 10 and 69% of survey respondents in Year 11.

parental communication function was highlighted as a significant benefit of Eedi, one may have expected teachers to report a major change.

The number of parent log-in records was significantly lower for students who were eligible for FSM compared with those who were not. This is in contrast to the Texting Parent EEF trial which did not find differences in parental engagement by whether the students were eligible or not for FSM. For all parents in the Eedi trial, the parental login was free, but in non-trial conditions parents normally pay £3.99 a month (except in families where students are eligible for FSM, who receive it for free). It was anticipated that removing the barrier associated with financial cost of the service would make this function inclusive, but the evaluation suggests that additional barriers may exist. It is also important to note that FSM eligibility does not necessarily capture all low income families—research has found small but significant groups of children living in poverty who are not eligible for FSM (Taylor, 2018).

Overall, there was little evidence of Eedi impacting on students' maths attainment as reported by teachers. 81% of Year 10 teachers and 69% of Year 11 teachers who completed the survey reported that they had not noticed a change in their students' levels of attainment in maths over and above what they may have expected from the cohort at this stage in the year. Covid-19 prevented the full impact analysis, but it is difficult to hypothesise that Eedi would have had a significant impact on their maths attainment, given that only a quarter of students in Year 10 and 4% of students in Year 11 completed ten or more quizzes.

The case study visits were the only source of learner reflections on using Eedi, and most schools were reluctant to permit such visit. The survey therefore suggests that we have only received the views of learners in schools that were relatively engaged with the intervention. It was not possible to test this due to the cancellation of the maths GCSE exams as a result of Covid-19.

There is some evidence that, for the subset of teachers who responded to the evaluation survey, there was a reduction in maths homework-related workload of 28 minutes per week. This is based on the teacher survey, which the evaluation team consider represents a biased sample of the intervention teachers who did engage with the platform. There is evidence that some teachers found Eedi to be burdensome. The evaluators speculate that these teachers may have stopped using the platform and responding to the evaluation survey. The statistical estimate of workload, however, cannot be formally linked to any meaningful statistical parameter due to a lack of sampling frame, general non-response, and differential non-response across trial arms.

A further limitation was the lack of baseline adjustment for prior workload at the teacher level (though some adjustment for prior workload was available aggregated to the school level). This means that the results, although promising, do not warrant a formal causal interpretation. This suggestion of promise does nevertheless support the idea that technology can potentially reduce teacher workload (EEF, 2019)—an idea that seems to have lost some momentum in terms of government policy since the outset of this trial. The 2019 Teacher Workload Survey suggested some small reductions in teacher workload since the 2016 survey, but this did not consider the use of online platforms such as Eedi. This trial highlights that online homework platforms have the potential to reduce workload but warn that this must not come at the expense of student engagement and attainment.

Limitations and lessons learned

In terms of the impact evaluation, the target estimate was the average effect of intention to treat (AITT). This means the average effect on workload of offering teachers in intervention schools the opportunity to use the Eedi platform. The estimates are based on survey data. There are likely to be several sources of bias that frustrate the evaluation's capacity to obtain an unbiased estimate of AITT. It is assumed that the survey respondents are the sample AITT that is the target of interest. This means that we estimate AITT for those teachers who comprised the 'as randomised' sample, that is, those teachers responsible for delivering teaching and learning to the focal cohort of children (those entering Year 10 at September 2018) at the point of randomisation. Several factors make this challenging:

- Firstly, the evaluation team did not have access to a sampling frame for these teachers—questionnaires were distributed by schools, but some schools did not distribute questionnaire at all, and others were assumed to have done so arbitrarily. The evaluation team was therefore unable to estimate the probability of selection into the achieved sample.
- Secondly, the absolute sample size of teachers in both arms of the trial differed appreciably, particularly in later waves of the survey, where one would *a priori* expect them to be broadly equal in size. This suggests that the processes of missingness in terms of questionnaire returns are likely to differ in the two arms.

- Thirdly, the data available to control for missingness both in terms of inferences to the 'as randomised' sample and in terms of obtaining an unbiased estimate of AITT was limited. There was no measure of pre-intervention workload at the teacher level which means that the analysis could not adjust for pre-existing differences in workload within the achieved sample. (This would not necessarily be required other than for the fact that the intervention and control samples are unbalanced.) It was possible to use pre-intervention data on workload to derive aggregate school-level measures of workload, but these were missing for quite a large proportion of the achieved sample and to conduct an analysis of the complete cases sample on this would reduce the sample size still further and risk introducing yet another source of bias. Furthermore, the observed data available at base line is not judged to be sufficiently reliable to implement multiple imputation under the assumption of missing at randomness (MAR). There is no reliable measure of take-up among intervention group teachers that can be explicitly linked to the working minutes reported in the reference week—though it is probably a reliable general measure of take-up for the achieved sample.
- Fourthly, administrative data suggests that take-up, particularly towards the end of the intervention, was very low among teachers in intervention schools, although the 'general' measure of take-up available from the survey suggests that our sample covers the small fraction of teachers who did, in the main, use the system.

As previously noted, the trial was substantially limited by the absence of a teacher sampling frame. It was assumed that the sampling frame could be derived from the Wonde database but in reality, it was not possible to differentiate maths teachers from teachers of other subjects that begin with the letter m, such as music, media, and mechanics. This was because each school had unique conventions for naming lessons, which in many instances did not use the word maths. This severely limited the evaluation team's ability to follow up non-response to the teacher evaluation survey or assess the distribution of the missing data. It is recommended that in future trials, teacher email is collected on the school MoU.

Homework apps are commonplace and are particularly compatible with maths as the answers can be objectively marked, as opposed to open-ended questions that typically require a human marker. The usual practice data suggested that teachers and students were using multiple apps—for example, they referred to using the videos in Hegarty maths. Whilst the impact of Eedi on students' maths attainment was not possible due to the cancellation of the maths GCSE exams in summer 2020, if this were possible, accounting for the patchwork of platforms and their combined use would have presented a substantial challenge. Future trials of virtual tools may want to consider them in the wider virtual environment rather than attempt to isolate them.

The sampling of the case study visits was limited in the sense that schools were reluctant to take part in the evaluation activities. The evaluation team speculated that this was due to low use of the Eedi platform and sent tailored emails to low use schools explaining that the evaluation was very keen to understand why some schools were not using Eedi. The process evaluation team did not want to risk prompting schools to withdraw from the trial, so the emails were not pursued with telephone follow ups. Given the unprecedented cancellation of the summer exams, this may have resulted in substantially less-than-optimal data, which may be something to consider for further trials.

Whilst the case study visits included students' focus groups, the majority of data collection was angled towards the teachers. A survey of learner experiences of using Eedi would have added further understanding of how widespread key findings were amongst the wider student population. This is particularly the case when one considers that schools that were not engaged with the platform were reluctant to take part in a case study visit. Similarly, the absence of a strand of parental data collection is in hindsight an area of weakness in the present study. Parents are a difficult stakeholder to access as doing so places an administrative burden on schools. Nevertheless, based on this trial, it is recommended that any future evaluations of products with a parental feature incorporate a strand of data collection directly from this group.

Future research and publications

The project team will seek to publish the results of this study in an academic journal. No other publications are foreseen at this time.

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Appendix A: EEF cost rating

Figure 2: Cost rating

Cost rating	Description
£ £ £ £	*Very low:* less than £80 per pupil per year.
£ £ £ £	*Low:* up to about £200 per pupil per year.
£ £ £ £	*Moderate:* up to about £700 per pupil per year.
£ £ £ £	*High:* up to £1,200 per pupil per year.
£ £ £ £ £	*Very high:* over £1,200 per pupil per year.

Appendix B: Security classification of trial findings

This project and its evaluation were affected by the 2020 partial school closures caused by the Covid-19 pandemic, and the cancellation of GCSE examinations in 2020. As a result, the evaluators were not able to use GCSEs in order to estimate the impact of the project on maths attainment. Therefore, it was not possible to rate the security of impact estimates.

Appendix C: Changes since the previous evaluation

No previous evaluation.

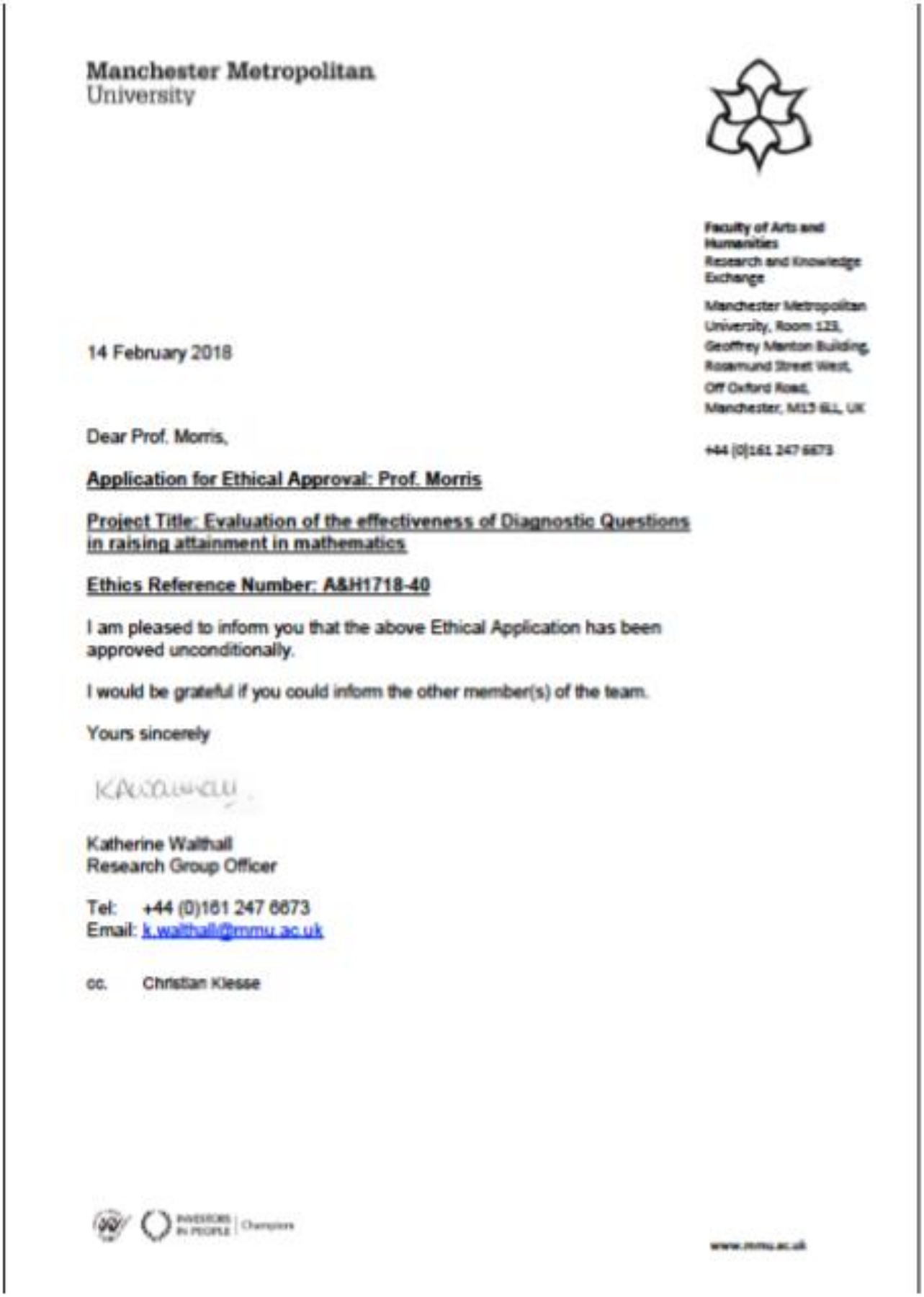
Appendix D: Effect size estimation

Appendix table 2: Effect size estimation

			Intervention group		Control group			
Outcome	Unadjusted differences in means	Adjusted differences in means	n (missing)	Standard deviation of outcome	n (missing)	Standard deviation of outcome	Pooled standard deviation	Population variance (if applicable)
Teacher workload (hours per week)	-23.32	-28.34	272	191.6	417	205.7	200.3	n/a

Further appendices

Appendix 1: MMU ethical approval



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14 February 2018

Dear Prof. Morris,

Application for Ethical Approval: Prof. Morris

Project Title: Evaluation of the effectiveness of Diagnostic Questions in raising attainment in mathematics

Ethics Reference Number: A&H1718-40

I am pleased to inform you that the above Ethical Application has been approved unconditionally.

I would be grateful if you could inform the other member(s) of the team.

Yours sincerely

Katherine Walthall
Research Group Officer

Tel: +44 (0)161 247 6673
Email: k.walthall@mmu.ac.uk

cc. Christian Kiesse

www.mmu.ac.uk

Appendix 2: Research information sheet

PERU Policy Evaluation Research Unit

Manchester Metropolitan University

AlphaPlus

RESEARCH PROJECT INFORMATION SHEET

Dear Parent/Guardian,

[School Name] is taking part in a research project over the next two academic years (2018-19 and 2019-20). The school has agreed to the project, and the activities are being planned within normal class time and as part of children's scheduled maths homework tasks. Below, we describe why we are doing this research project, and what is involved for you and your child.

Please read the information carefully and keep this sheet for future reference. If you decide that you do **NOT** want your child to be involved in the research, then please follow the link at the end of this letter to withdraw your child from the project or alternatively, sign the attached form at the and return to the school by [*each school to insert a date, approx. 2 weeks from distributing this sheet*] **If you are happy for your child to be involved, you do not have to do anything.** You are free to withdraw your child from this project at any time by contacting us using the details at the end of this letter.

What is the purpose of the project?

The purpose of the research is to study the effectiveness of an online maths programme 'Eedi' on pupil achievement and teacher workload in a 'real-life' school setting. The programme is used to set weekly maths quizzes as homework. The quizzes will replace part of the existing maths homework for your child rather than being set in addition to it. The programme provides both pupils and their teachers with feedback on the answers they have given and helps them to address common misunderstandings in maths via both individual and group feedback. Parents also have the opportunity to receive feedback on their children's performance and activities via text messages and/or by logging in to the Eedi website.

We are conducting this study across 176 schools in England, as a Randomised Controlled Trial. This means half of the participating schools will be randomly chosen to use the Eedi programme with their pupils. These are the 'intervention' schools. The other half will not use the programme. These are the 'control' schools. The random allocation of schools is essential to the evaluation as it is the most rigorous way to evaluate the effects of the programme. **At this stage we do not know whether your child's school will be an intervention or a control school**, however, we will be collecting data on the pupils from all schools in the study, regardless of whether they are intervention or control schools, including KS2 and GCSE results as well as related background data such as free school meals eligibility.

Who is undertaking the research?

The research is undertaken by Alpha*Plus*, an independent educational consultancy, in partnership with the Policy Evaluation and Research Unit (PERU) at Manchester Metropolitan University (MMU). The project is funded by the Education Endowment Foundation (EEF). EEF is an independent charity that funds research to test various ways of raising attainment in English schools. The project is being delivered by Eedi in partnership with the Behavioural Insights Team (BIT). Eedi are an educational

technology company who have developed the Eedi programme that your child will use, and BIT are a research company.

What is involved if my child takes part?

If your child's school is selected as an intervention school then your child will be using Eedi in Year 10 and Year 11 and data about each pupil will be collected through the Eedi platform covering their usage of the platform and their performance in the quizzes. if the school is a control school, your child will not be using Eedi as part of this research. Regardless of whether the school is an intervention or control school, data on the current Year 9 pupils will be collected to assist with studying the impact of the programme. This information is vitally important so that the research team can link their study records to national data that stores the results of pupils' performance in maths and English examinations. These national data are known as the National Pupil Database.

We are asking for your permission to obtain information about your child from the school, including their name, sex, date of birth, Free School Meals status and Unique Pupil Number. We (Alpha*Plus* and Manchester Metropolitan University) will use the information provided to link with the National Pupil Database (which is held by the Department for Education) to collect your child's Key Stage 2 results and eventual mathematics GCSE grade in 2020. Further matching may be undertaken with NPD data for subsequent research. Information provided will be shared with a small group of researchers at BIT, with the Department for Education, Education Endowment Foundation (EEF - the funder of this project), EEF's data contractor FFT Education and in an anonymised form to the UK Data Archive for research purposes.

Once your child's information is included in the data set, the data will be anonymised and no one will be able to identify individual pupils. We will not use your child's name or the name of the school in any report arising from the research.

All personal data will be treated with strictest confidence by the evaluators in accordance with the requirement of the General Data Protection Regulation (GDPR) 2018.

What will happen to the results of the research project?

The results of this project will be reported by the Education Endowment Foundation. The report will be freely available on their website. The anonymised results may also be written up for publication in academic journals.

Who has approved this research?

The study has been approved by the Alpha*Plus* Ethics Advisor, the Manchester Metropolitan University Ethics Committee (for activities involving its researchers) and the Education Endowment Foundation.

Contact for Further Information

If you have any questions about how we will use your child's data or about the way this study is conducted, please contact Alpha*Plus* by email: eefevaluation@alphaplus.co.uk, or by phone: 0161 249 9249.

If you have any queries about the Eedi maths programme and your child's use of this, please contact Eedi by email: eef@eedi.co.uk, or by phone: 020 3176 4875

Thank you very much for your time!

Appendix 3: Research withdrawal slip

PERU Policy Evaluation Research Unit

Manchester Metropolitan University

AlphaPlus

RESEARCH PROJECT WITHDRAWAL SLIP

Please only complete if you do NOT want your child's data to be used in this research project

Details of the research project are included in the attached information letter. **If you are happy for your child's data to contribute to this project, then you do not have to do anything.**

If you do NOT want your child's data to be used for this evaluation, then please withdraw your child from the project online or via the below slip:

Alternatively, you can withdraw your child via the below slip and return it to the reception area at your school by <<enter date>>.

To withdraw your child online go to www.bit.ly/eediform

I do NOT want my child's data to be used for the purposes of this evaluation.

Child's full name: _____

School: _____ Class/form_____

Parent/guardian name: _____

Parent/guardian signature: _____

Date: _____

Completed slips can be returned to the reception at your school.

Appendix 4: Memorandum of Understanding

Memorandum of Understanding (MOU)

Agreement to participate in EEF's Eedi project

This MOU sets out the roles and responsibilities of schools participating in, and the parties involved in delivering and evaluating, the Eedi project. Schools should read this MOU in full, direct any questions to Eedi and then sign and return it to Eedi as per the instructions at the end of this document. Further information about how this research complies with GDPR are provided in the accompanying information sheet.

The Eedi project is being delivered by Eedi in partnership with the Behavioural Insights Team (BIT). Eedi are an education technology company and BIT are a social purpose consultancy specialising in the application of behavioural science to policymaking. Together we refer to Eedi and BIT as the project 'developers'. The project is funded by the Education Endowment Foundation (EEF). EEF are an independent charity that fund research to test various way of raising attainment in English schools. The project is being evaluated by Alpha*Plus*, an independent education sector consultancy, in partnership with Manchester Metropolitan University (MMU). Together we refer to Alpha*Plus* and MMU as the 'evaluators'.

1. Aims of the project

The aim of this project is to evaluate the impact of the formative assessment programme 'Eedi' (previously known as Diagnostic Questions) on attainment in maths at GCSE (Key Stage 4) and teacher workload.

2. About Eedi

Eedi is an online formative assessment programme for maths, designed to help pupils correct their misunderstandings with minimal additional work for teachers. Eedi will provide on-site training for maths departments in how to use the programme. The core components of the programme are as follows:

1) **Schools** assign formative assessment 'quizzes' aligned to their exam board's Scheme of Work. Eedi instantly populates a calendar of multiple choice quizzes for the entire year. If they wish, teachers can manually adjust the ordering/scheduling of the quizzes. There are two quizzes per topic in the Scheme of Work.
2) **Pupils** complete quizzes each week according to the Scheme of Work set by their teacher. Each quiz comprises ten questions and each question has four multiple choice answers. Each incorrect answer is designed to diagnose a specific 'misunderstanding'. Quizzes are marked instantly by Eedi. Pupils are then prompted to review their answers with feedback targeting their specific misunderstanding. Pupils are also given targeted learning materials from Oxford University Press (OUP).
3) **Teachers** do not have to mark quizzes, Eedi marks them automatically. Teachers can review their class's scores on Eedi, identify common misunderstandings and if necessary, send additional feedback to all pupils making that mistake.
4) **Parents** can receive automated text messages about new quizzes, pupils not completing quizzes as required, or what topics are being covered in class. More detailed reports are available by logging in to the Eedi website.

3. The evaluation

As stated above, the EEF Eedi project evaluators are Alpha*Plus* consultancy in partnership with Manchester Metropolitan University (MMU).

3.1 Who is included

Up to 176 schools will participate in the evaluation. The evaluation is conducted as a Randomised Controlled Trial (RCT). This means half of the participating schools will be randomly chosen to receive the intervention (Eedi). These are the 'intervention' schools. The other half will not receive the intervention. These are the 'control' schools. The random allocation of schools is essential to the evaluation as it is the most rigorous way to evaluate the effects of the programme. It is therefore important that schools understand, and consent to the random allocation process which will be carried out by the evaluators.

The evaluation will take place over 2 years, including the 2018/19 and 2019/20 school years. Only pupils in Year 10 in 2018/19 and Year 11 in 2019/20 will be included in the project.

3.2 Data collection
The evaluators will require the following data.

1) Eedi will collect the following school information: URN for all schools that have signed an MoU; Post code for the school; Region (for the school); LAD (local authority district); Exam board (mathematics GCSE); Classes in which each pupil currently receives maths instruction (so that we know which pupils are currently learning together – we have to be able to locate each pupil within a class and each class within a school); and contact information for the maths teachers involved.
2) Eedi will collect data about each pupil through the Eedi platform covering their usage of the platform and their performance in the quizzes.
3) Eedi will collect the following pupil personal data from schools using WONDE: pupils' names, Whether the pupil started GCSE in Year 9, Free School Meal eligibility, date of birth, sex and Unique Pupil Number (UPN). This data will be made available to the evaluators (MMU), who will match it with the participating pupils' data in the National Pupil Database (NPD) obtained via the DfE. From the NPD, the evaluators will obtain the pupils' Key Stage 2 results and at the end of the study their GCSE maths scores. The evaluators will also require details of which maths form or class each pupil is in for Year 10 and Year 11.
4) Teachers will be requested to complete a short online survey on their workload and their current practice (to monitor delivery, changes in practice and perceptions of impact where appropriate) at four points in the project: in spring/summer 2018 and then again in December 2018, March 2019 and March 2020. The survey will take approximately 15 minutes to complete.
5) The evaluators will visit a small number of intervention schools to undertake interviews and focus groups with teachers and a small number of pupils as part of the case study research element of the evaluation. Appropriate arrangements for this would be made with the case study schools.

Each school that agrees to take part in the study will be assigned at random to either intervention or control conditions. Random assignment will be undertaken by MMU who will also be responsible for analysing the data collected from schools by Eedi using WONDE.

3.3 Data protection
All pupil and teacher personal data will be treated with strictest confidence by the evaluators in accordance with the requirements of the GDPR 2018. Pupil personal data, including pupils' names, Free School Meal eligibility, date of birth, sex and Unique Pupil Number (UPN) will be matched with the NPD as part of the evaluation. Further matching may be undertaken with NPD data for subsequent research. The evaluators will share

the matched data with the developers, the Department for Education, the EEF, EEF's data contractor FFT Education and in anonymised form, the UK Data Archive.

No school, teacher or pupil will be identified in any report arising from this evaluation. The information collected will be used for research purposes only and no information that can identify individuals will be used for any other purpose. Any personal data collected will be destroyed in accordance with the GDPR when it is no longer required. The project has received ethical approval from MMU and Alpha*Plus*' respective ethics committees. Each organisation's ethical approval will pertain only to activities carried out by that institution.

3.4 Communication with parents

All participating schools will distribute an information letter, provided by the evaluators, to the parents of all pupils participating in the study. The letter will notify parents of the research, the data that will be collected on their child, how the data will be processed and give them the opportunity to withdraw from the study if they wish. Schools will allow parents an initial two weeks to respond if they wish to withdraw their child and then provide the evaluators with names of pupils that have been withdrawn, so they can be omitted from data collection. Parents will be able to withdraw their child at any point during the project.

4. Responsibilities for schools, Eedi and evaluators

Responsibilities for schools, Eedi and the evaluators are set out below.

4.1 Responsibilities for control schools

1) Distribute letters to parents of 2018/19's Year 10 pupils and provide the evaluators with names of those who have been withdrawn from the evaluation by their parents.
2) Allow Eedi to link to the school database via WONDE.
3) Provide the evaluators with the data described in Section 3.2, should it not be available via Eedi and WONDE.
4) The school MIS administrator must ensure all details connected to the Y10 2018/2019 are correct, this includes students, parents, teachers, classes and groups.
5) Not use Eedi for the duration of the trial (Eedi will block access).
6) Ensure teachers complete the teacher survey, as required by the evaluators.

At the end of the project in July 2020, control group schools will receive £1000 in compensation for participating in the programme and adhering to their responsibilities.

4.2 Responsibilities for intervention schools

1) Distribute consent letters to parents of 2018/19's Year 10 pupils and provide the evaluators with names of those who have been withdrawn.
2) Allow Eedi to link to the school database via WONDE.
3) Organise the Scheme of Work on Eedi to match the school's scheme.
4) Arrange a time in the Summer Term of 2017/18 for Eedi to provide 2 hours of training to the maths department.
5) Appoint a Project Lead (and backup) from the school to liaise with Eedi and the evaluators as necessary.
6) The Project Lead (and backup) will receive an additional 30 minutes of training on troubleshooting minor problems. The Project Lead will also be expected to speak with their account manager at Eedi once every half term on a call lasting up to 30 minutes.
7) Arrange for pupils without the required facilities at home to either complete the quizzes on-site after school, or loan pupils electronic devices when quizzes are due. Project Leads will supervise this process.

8) Set an average of two quizzes per week for all Year 10 classes in 2018/19 and Year 11 classes in 2019/20, reducing homework accordingly. If this average falls below 1.25, Eedi will contact the Project Lead to discuss how usage can be increased.
9) Ensure teachers complete the teacher survey, as required by the evaluators.
10) Provide the evaluators with the data described in Section 3.2, should it not be available via Eedi and WONDE.
11) Should they participate in a case study, arrange access to teachers and pupils and accommodate a school visit from the evaluators in Spring 2019 (e.g. provide a room for interviews or focus groups to be conducted).
12) The school MIS administrator must ensure all details connected to the Y10 2018/2019 are correct, this includes students, parents, teachers, classes and groups.
13) Add Eedi to your school's homework policy.

4.3 Responsibilities for Eedi

1) Be the first point of contact for the delivery of the programme, via a designated account manager.
2) Help schools connect to WONDE, to enable data sharing.
3) Contact Project lead to assist them in setting up the school's Scheme of Work.
4) Provide the evaluators with the data they need for the evaluation.
5) Provide schools' maths departments with 2 hours of training on:
   a) The context of this study and research on formative assessment
   b) Monitoring quiz completion and class performance
   c) Giving feedback and setting follow up questions
   d) Parental alerts
   e) Ensuring access for all pupils
   f) How to use Eedi's online technical support.
6) Provide Project Leads with an extra 30 mins of training on:
   a) Troubleshooting minor problems
   b) Helping teachers access Eedi's online technical support
   c) Ensuring access for all pupils
   d) Liaising with their account manager at Eedi.
7) Provide access to their online technical support team, available 8am-8pm Monday to Friday.
8) Monitor each school's usage and reach out if they appear to need support. Designated account managers will first contact the school's Project Lead and their backup if the Lead is unavailable.
9) Check in with the school's project lead every half term in a call lasting up to 30 minutes.
10) Fund up to £1000 worth of text messages for each school related to the project each year.
11) Provide access to OUP materials for all participating pupils for the duration of the project.

4.4 Responsibilities for the evaluators

1) Answer any queries about the evaluation.
2) Collect withdrawal notifications from schools and ensure those children's data are not collected.
3) Randomly allocate schools to the control or intervention group and inform schools and the developers of their allocation.
4) Collect, manage, store and analyse the data required for the evaluation.
5) Administer teacher surveys.
6) Conduct case study visits in a small number of schools during Spring 2019.
7) Ensure all members of the evaluation team are appropriately trained and have full Disclosure and Barring Service (DBS) clearance.
8) Publish a report on the findings of the evaluation.

5. Timeline

2018

Jan – April	Eedi recruit schools
May – July	Eedi train intervention schools
Sep	Trial starts

2018-20

Every half term	School Project Lead talks with Eedi account manager
Spring 2018, Dec 2018, March 2019 March 2020	Teachers complete an online survey
Spring 2019	Evaluators conduct case studies with 12 schools
May – June 2020	Year 11 pupils sit GCSEs

We commit to the evaluation of Eedi as set out above.

Please sign two copies. Keep one and email the other to EEF@eedi.co.uk, or by post to:
Unit 4.2.2.
The Leathermarket
Weston St
London
SE1 3ER

School Name .....

Name of Head/Exec Principal/Manager .....

Signature ..... Date .....

Name of Account Manager, Eedi .....

Signature ..... Date .....

Appendix 5: Data sharing agreement

Data Sharing Agreement for Education Endowment Fund (EEF) Eedi project –

1. Project

Evaluation of Behavioural Insight Team Eedi programme ('the Project')

2. Organisations involved

Eedi (whose registered address is Unit 4.2.2 The Leather Market, Weston Street, London, England, SE1 3ER)

Manchester Metropolitan University (MMU) (whose registered address is Manchester Metropolitan University, All Saints Campus, Oxford Road, Manchester M15 6BH)

AlphaPlus Consultancy Ltd (AlphaPlus) (whose registered address is Unit 109, Albert Mill, 50 Ellesmere Street, Castlefield, Manchester, M15 4JY)

3. Definitions

Agreement: means this Agreement

Effective Date: means the date on which all parties have signed this agreement

Parties: means the organisations listed in clause 2 above

Personal data: has the meaning given to it in the General Data Protection Regulation (EU 2016/670)

Processing: has the meaning given to it in the General Data Protection Regulation (EU 2016/670)

Privacy Laws: the Data Protection Act 1998 (the DPA) as amended from time to time, the Data Protection Directive (*95/46/EC*) as amended from time to time, the Electronic Communications Data Protection Directive (*2002/58/EC*) as amended from time to time, the Privacy and Electronic Communications (EC Directive) Regulations 2003 (*SI 2426/2003*) (as amended from time to time), from 25 May 2018 the General Data Protection Regulation (EU 2016/679) as amended from time to time and all applicable laws and regulations relating to the processing of personal data and privacy, including where applicable guidance and codes of practice issued by the Information Commissioner or any other national data protection authority, and the equivalent of any of the foregoing in any relevant jurisdiction.

Term of the Agreement: 1 March 2018 to 1 March 2021 [Note: we may need to extend depending on when final GCSE results are available.]

4. What is the purpose of the data sharing?

4.1 The data sharing is necessary for the parties to undertake a research project into the effectiveness of an online homework platform ('the Eedi Platform') aimed at pupils currently in Year 9 through to Year 11.

4.2 This project is in the public's interest at the results will help assess the performance of the Eedi Platform on student achievement and teacher workload.

4.3 The Eedi Platform is designed to deliver online mathematics homework assignments. The collection and sharing of pupil data participating in the research project is necessary in order for the parties to evaluate the effectiveness and impact of the Eedi Platform on pupils' attainment and achievement in mathematics. In addition, the collection and sharing of pupil data and surveys from teachers participating in the Project is necessary to assess the impact of the Eedi platform on teacher workload. The collection of data describing parents' usage of and engagement with the homework platform will also be used in the evaluation.

5. Roles of the Parties and Processing Conditions

5.1 The parties acknowledge that the factual circumstances will dictate their roles under the Data Protection legislation. Notwithstanding that fact, the parties agree that;

5.1.1 The schools participating in the project will be the originating Data Controllers for any pupil data or teacher data they disclose to the parties under this project.

5.1.2 The Department of Education is the originating Data Controller for any data disclosed to the parties from the National Pupil Database;

5.1.3 Eedi are a Data Controller in respect of any personal data collected through the Eedi Platform

5.1.4 Eedi will be Data Controllers in respect of any personal data of pupils/and or teachers which they collect or otherwise process for the purpose of this project; and

5.1.5 MMU and Alpha Plus will be Data Controllers in Common in respect of any personal data of pupils/and or teachers which they process for the purposes of the project; and

5.1.6 MMU will be a Data Controller to the extent it processes any personal data from the National Pupil Database for the purposes of the project.

5.1.7 MMU relies on the below processing condition under the GDPR in order to process personal data under this agreement;

(i) The processing is necessary for the performance of a public task (namely the performance of the University's research functions) (article 6(1)(e).

5.1.8 The other parties rely on the below processing condition to process personal data under this agreement

(i) The processing is necessary for purposes of legitimate interests (article 6(1)(f)).

6. Personal Data Processed

a. Eedi have developed the Eedi platform. Eedi and BIT have received funding from the Education Endowment Fund ('EEF') to trial this platform in secondary schools. AlphaPlus have received funding from the EEF to evaluate the effectiveness of the Eedi Platform and have subcontracted part of this evaluation work to the University.

b. Eedi will be responsible for recruiting schools to participate in the Project. Eedi will ask a member of the senior leadership team to confirm their school's participation in the Project by signing a Memorandum of Understanding (School Recruitment MoU) for the research project. Eedi will be responsible for approval for the terms of this MoU from the other parties and from EEF.

c. The MoU will require the participating schools to circulate a Parental Letter to all parents of children participating in the Project. This letter will inform parents about the Project, the organisations involved and will allow them to withdraw their child from the Project. AlphaPlus are responsible for drafting the Parental Letter and for seeking approval for the terms of this letter from the other parties and EEF.

d. Once Eedi have received the signed School Recruitment MoUs from the Schools, Eedi will provide MMU with the details of the participating schools. MMU will be responsible for dividing these schools into an intervention group and a control group. Eedi will only be implemented in those schools in the intervention group. The control group will not be given access to Eedi.

e. Eedi will be responsible for obtaining from the intervention and control schools the below data about the schools, pupils participating in the Project and teachers at those schools:

Participating Pupil Data (data of pupils participating in the Project)

(ii) Unique Pupil Number
(iii) Pupil's full name;
(iv) Date of birth;
(v) Sex;
(vi) Ever-FSM status; and
(vii) maths set or class ID
(viii) Classes in which each pupil currently receives maths instruction
(ix) Whether the pupil started GCSE in Year 9

School Data (data of schools participating in the Project)

(x) The URN for all participating schools
(xi) Post code for the school
(xii) Region (for the school)
(xiii) LAD (local authority district)
(xiv) Exam board (mathematics GCSE)

Teacher Data (data of mathematics teachers at the participating schools)

(xv) Names and email addresses of the teachers

a. Eedi will be responsible for securely transferring the Participating Pupil Data and School Data to MMU. Separately, Eedi will be responsible for securely transferring the Teacher Data to Alpha Plus. secure transfer to be agreed by the parties involved. Eedi and BIT will ensure this data is transferred to MMU and AlphaPlus respectively by a date to be agreed in the Protocol between the Parties.

b. Eedi will then liaise with schools to implement the Eedi Platform to Participating Pupils. Eedi will make the Eedi Platform available to Participating Pupils in the intervention schools from September 2018 through to July 2020.

c. AlphaPlus will be responsible for contacting the Teachers in the Participating Schools to conduct a survey to assess their workload associated with mathematics and fidelity to the intended programme (in intervention schools), and absence of 'treatment' (in the control schools). Additional information will be collected about length of time in role, full time/part time status, mathematics specialist or not. The frequency and timings of these surveys will be agreed in a Protocol between the Parties. AlphaPlus will use this data to evaluate the effect of the intervention on teacher workloads.

d. AlphaPlus agree to share the Teacher survey results with the MMU via a secure method specified in the Schedule to this agreement.

e. MMU agrees to request access from the Department for Education (DfE) to Key Stage 2 mathematics results and GCSE mathematics results of the Participating Pupils from the National Pupil Database ('the National Pupil Database Data').

f. The University will use the Pupil Data, the National Pupil Database Data, the School Data and the Teacher Data to evaluate the impact of the intervention on pupil attainment at GCSE and on teacher workloads.

g. MMU will share anonymised results of their research with EEF and BIT. EEF will publish the anonymised results in an evaluation report and the University and AlphaPlus write articles based on the anonymised results.

7. Data Protection Responsibilities

Data Protection Compliance

7.1 All parties agree to process any Personal Data processed under this Agreement in accordance with the Privacy Laws and not do anything to place another party in breach of its legal obligations, including the obligations under the Privacy Laws. For the signatories of this agreement, this will include: maintenance of a register of data and all parties will update their organisation's data register to include this project; production and monitoring of a risk assessment; development of and adherence to specific data processing procedures. In order to minimise any risk of data breach, data will be anonymised or pseudonymised at the earliest opportunity.

Fairness and Transparency

7.2 For the purposes of clause 7.3, the term 'transparency information' means the information listed below;

- What categories of personal data will be collected and analysed by the project
- How and why that personal data will be processed (including details of whether the data will be matched with other data sources)
- Identity[/ies] of the Data controller[/s]
- legal basis for processing
- retention period for the data
- subject's rights under GDPR
- details of parties who have access to the data and their roles
- consequences for the subject of failing to provide the data
- existence of any automated decision making or profiling

7.3 Eedi are responsible for ensuring that the transparency information is provided in:

(i) The School Recruitment MoU provided to all participating schools; and
(ii) The terms and conditions of the Eedi Platform which must be displayed to pupils before they register to use the Platform.

In addition Eedi agrees to ensure that the terms and conditions for the Eedi Platform notify pupils that their parents will be able to access their use of the Platform and results of exercises undertaken on the Platform.

7.4 AlphaPlus are responsible for ensuring that the Parental Letter provides parents at the Participating schools with sufficient detail about the Project to enable them to make an informed decision about whether they wish to withdraw their child from the Project. As a minimum this Letter must include the transparency information and explain to those parents how they may withdraw their child from participating in the Project.

7.5 Eedi are responsible for ensuring that parents are provided with a reasonable period in which they may withdraw their child out from the Project **before** the Project is commenced and for informing parents that they may withdraw their child at any point during the Project.

7.6 Eedi are responsible for maintaining a list of parents who have withdrawn their child from the Project (either before the project or at any point during the project) and for notifying the other parties promptly and within 1 week of a withdrawal, that a parent has withdrawn their child. All parties agree to delete any personal data held in relation to the child within 2 weeks of this notification.

Limitation of Purpose

7.7 All parties agree to only process the Personal data under this Agreement for the sole purpose of delivering the Project and agree not to use the Personal Data for any other purposes. The Parties agree to ensure that the processing of Personal Data is in accordance with the information provided to the Participating Schools in the MoU and the information provided to Parents in the Parental Letter.

Accuracy and Data Minimisation

7.8 Eedi, AlphaPlus and MMU agree to ensure the accuracy of any personal data they collect under the agreement.

7.9 All parties agree to only process the minimum amount of personal data necessary to achieve the Project's purposes as described in clause 3.

7.10 Eedi will inform MMU when any pupils in the intervention schools in the trial leave the school, there is a change in their maths set or class ID or their parent wishes to withdraw the pupil from the trial. Where Eedi are made aware of the same information, or changes to information, for pupils in the control schools they will also make MMU aware. MMU will ensure that pupil data is updated accordingly or removed from any data files.

7.11 Eedi will inform MMU when they are made or become aware that any teacher leaves a school or their class or contact details change. MMU will update their records accordingly. Eedi will also let AlphaPlus know if any teacher leaves a school and/or their email address changes. Eedi will also provide information about teachers who replace any who leave. AlphaPlus will update their records accordingly.

Data Security

7.12 All parties agree to implement and maintain the technological and organisational measures to protect the Personal Data processed under this agreement against accidental or unlawful loss, alteration, destruction, or unauthorised disclosure, dissemination or access, or alteration. In particular all parties agree that they will employ the Security measures as follows where processing the personal data:
Eedi - database is stored on Microsoft Azure (SQL database, Table Storage and Blob Storage) in West Europe. The data is encrypted at rest and transferred over SSL.
MMU will hold the data securely in line with its Information Classification Scheme as detailed on this link https://www2.mmu.ac.uk/isds/information-security/policies/info-classification/
AlphaPlus will adhere to its policy for secure data projects as specified in Annex A.

7.13 All parties agree to notify the specified points of contact below, within 24 hours, in event that any party knows or suspect that any Personal Data processed under this agreement has or potentially has been, lost, disclosed to an authorised third party, accidentally destroyed or altered:

(i) Eedi point of contact – Simon Woodhead.
(ii) Alpha Plus point of contact – Clare Dowland.
(iii) The University point of contact – Steven Morris.

Confidentiality and Third Parties

7.14 All parties agree to take reasonable steps to ensure that their personnel who have access to any Personal Data are aware of the obligations under this Agreement in relation to that data and have undergone adequate training in the care, protection and use of personal data in compliance with the Privacy Laws.

7.15 All parties agree not to disclose or transfer the Personal Data to any third parties other than where;
(i) disclosure to Participating Schools, the EEF or the DfE is necessary for the purposes of the Project; or
(ii) disclosure is required by law.

Non-European Transfers

7.16 All parties agree not to transfer the personal data to any country outside of the European Union.

Individuals' Data Protection Rights

7.17 Eedi will chiefly be responsible for contact with schools and will be responsible for handling any requests from individuals to exercise their rights under the Privacy Laws including requests for access to personal data. All parties agree to provide Eedi with reasonable assistance to ensure that Eedi can respond to such requests in compliance with the Privacy Laws.

Data Retention and destruction

7.18 MMU and AlphaPlus will send all data to the EEF to archive within three months of the end of the project. On acknowledgement of receipt of the data by EEF, MMU and AlphaPlus will destroy (within 14 days) all personal data associated with this project, including data sets received from the Data Controllers: schools, EEDI and NPD. MMU and AlphaPlus will advise EEF and BIT on completion of the destruction process.

Subcontractors

7.19 If a party wish to engage subcontractors to undertake processing under this agreement, the party will notify and seek the approval of the other parties. All parties agree to enter into a contract with their subcontractors which meet the requirements of the Privacy Laws and which imposes equivalent data protection obligations on the subcontractors as imposed on the parties under this agreement.

8. Standard Terms

8.1 Parties shall review the effectiveness of this data sharing initiative every six months and upon the addition and removal of a party, having consideration to the aims and purposes set out in *Clause 3*. The parties shall continue, amend or terminate the Agreement depending on the outcome of this review.

8.2 Each party reserves its rights to inspect the other party's arrangements for the processing of Shared Personal Data and to terminate the Agreement where it considers that the other party is not processing the Shared Personal Data in accordance with this agreement.

8.3 In the event of a dispute or claim brought by a data subject or the Information Commissioner's Office (ICO) concerning the processing of Shared Personal Data against either or both parties, the parties will inform each other about any such disputes or claims, and will cooperate with a view to settling them amicably in a timely fashion.

8.4 The parties agree to respond to any generally available non-binding mediation procedure initiated by a Data Subject or by the ICO. If they do participate in the proceedings, the parties may elect to do so remotely (such as

by telephone or other electronic means). The parties also agree to consider participating in any other arbitration, mediation or other dispute resolution proceedings developed for data protection disputes.

8.5 Each party shall abide by a decision of a competent court of the Data Discloser's country of establishment or of the ICO which is final and against which no further appeal is possible.

8.6 This Agreement is drafted in the English language. If this Agreement is translated into any other language, the English language version shall prevail.

8.7 Any notice given under or in connection with this Agreement shall be in English. All other documents provided under or in connection with this Agreement shall be in English, or accompanied by a certified English translation.

8.8 .Where variation of this agreement is necessary to reflect changes to the project or the roles of the parties the parties agree to negotiate in good faith in order to agree reasonable variations. No variation of this agreement shall be effective unless it is in writing and signed by the parties (or their authorised representatives).

8.9 In case the applicable data protection and ancillary laws change in a way that the Agreement is no longer adequate for the purpose of governing lawful data sharing exercises, the Parties agree that the Specified Points of Contacts will negotiate in good faith to review the Agreement in light of the new legislation.

We commit to the terms of the data sharing agreement as detailed in this document.

MMU SIGNATURE [STEPHEN MORRIS]: _____
DATE: _____

EEDI SIGNATURE [SIMON WOODHEAD]: _____
DATE: _____

ALPHAPLUS CONSULTANCY LTD. SIGNATURE [ANDREW BOYLE]: _____
DATE: _____

Appendix 6: Manchester Metropolitan University's data protection statement

Manchester Metropolitan University's data protection policy can be found at this link:

http://www2.mmu.ac.uk/data-protection/

Appendix 7: AlphaPlus data security policy

AlphaPlus Data Security Policy

General

1) Alpha*Plus* will appoint a Data Manager for the project.

2) The Data Manager will setup a separate project on SharePoint and the secure file area within our server for secure files.

3) That person will be responsible for ensuring all the project team members understand their responsibilities and have signed up to the data security policy.

4) All Project team members as well as any internal and external consultants and sub-contractors (e.g. printers) working with confidential materials must sign a *Confidentiality Agreement* (in addition to this document) as part of their conditions of employment and be made aware of the confidential nature of any materials they may be working with at any given time.

5) Project team members must have access to policies which outline how to dispatch confidential materials and what to do if materials go missing (see **Appendices B and C**). *A typical confidentiality agreement is attached as* ***Appendix A***

6) That person will liaise directly with the client for the transfer of all data covered under the DPA. The client will be required to agree that our approach is satisfactory (e.g. by email)

Obtaining files from client and storage on Alpha*Plus* secure server

1) We will take instruction on this from the client, but either download files from their secure service or offer them a time-limited login to upload files to the Alpha*Plus* SharePoint or to the Alpha*Plus* secure file store system.

2) On receipt, the Data Manager will log the files and store them in the data warehouse for the project on the Alpha*Plus* secure server.

3) Clusters of files will be password protected using 7zip's or Winzip's AES256 encryption. Individual files may also be protected using the embedded protection in MS Office 2007, 2010 or 2013 (The password protection in MS Office 2003 and before is inadequate UNLESS the Microsoft 2007 compatibility pack has been installed: http://www.microsoft.com/download/en/details.aspx?id=3). In all cases, passwords will be of at least 12 characters and contain letters and numbers. Use of KeePass (keepass.info) to create and retain passwords is recommended. If so used, the location of files must not be stored within KeePass.

4) The Data Manager will decide which files are to be designated as secure. All files containing Personal Information and/or Sensitive Personal Information must be designated as secure. The client may wish additional files to be designated as secure.

5) Files stored on the secure server should be retained as required (according to procedures above) and deleted on completion

Exchanging secure files within the project

1. Users of secure files will use the secure file store and transfer procedures provided by Alpha*Plus* (see instructions in operations manual) according to the designated procedures. Secure Files will not be held in transfer areas for any longer than is necessary.

Project team working practices

1) All project team members must sign a copy of this document to say they have understood and agree to abide by the working procedures for the project.

2) Project team members will have access to all files on SharePoint but will be advised to only download those that they need to work on. Only those with specific need will be provided with access to the Alpha*Plus* Secure Server.

3) For standard working practice secure Files must only be stored and used in the office – not transferred out on laptops or memory sticks, etc. Where operational requirements require secure data to be transferred to a laptop or removable media (for example as part of an agreed data delivery) the laptop or removable media must be encrypted using the Microsoft Bitlocker application, in addition to the encryption of individual files.

4) Passwords for downloaded files will be obtained from the data manager by email or telephone. Where a password is sent by email, the email must include only nominal reference to the nature or location of the file.

5) Project team members must:
a. Store downloaded and newly created files in a single folder structure (on a discrete drive if such is available) – Note this file-store should not be set to synchronise with removable media such as a laptop or with any backup services.

b. Keep a log of downloaded files and new files they create.

c. Ensure all files, including working files are password-protected when not worked on using either 7zip or Winzip's AES-256 encryption with a password of 12+ characters.

d. Any back-up created should be physically secure and be able to have audited deletion as in (6) below – if in doubt back-up should be via storage of working files on SharePoint, password protected as appropriate.

e. Not leave files open on the desktop out of working hours or while their computer is unattended for long periods. For clarity, this means that at the end of each day, or at a point where files are not going to be worked on for half a day or more, all files, including working files, should be zipped/password protected as per (c) above.

6) No secure files should be transmitted by email. Files should be uploaded to SharePoint or the Alpha*Plus* Secure Server for others to download. Passwords for these files may be sent by email or telephone but if sent by email, the email should not contain the URL for the resource (e.g. send the URL and password in 2 separate emails).

7) No secure files should ever be recorded to removable media (for example memory sticks or cards) OR ever transferred by post without the prior permission of the Data Manager. Any such transfer must be via media protected using Bitlocker encryption or comparable whole device encryption.

8) When the project is complete, and following a check by telephone or email with the Data Manager, all project files must be 3-pass shredded using an approved shredder (currently suggest FILE SHREDDER 2 http://download.cnet.com/File-Shredder/3000-2144_4-10662831.html?tag=mncol with the DOD5220-22m shred setting) and the project team member should advise the Data Manager by email that all files have been shredded.

9) Any problems or breaches with security of secure files should be reported to Director of Operations immediately.

10) Where feasible, documents should be marked as secure.

11) The creation of paper copies of secure information should be kept to a minimum. Storage must comply with the following requirements:
a. Lockable equipment e.g. filing cabinets must be used to ensure all confidential materials are securely stored
b. Keys for lockable cupboards must be stored in a safe location
c. Confidential materials must not be left unattended on desks at any time.
d. Where materials are saved on to external media (eg CDs), these should also be stored securely e.g. in a safe or lockable cupboard

12) If any confidential materials need to be transported in any fashion, e.g. when attending a meeting, they must be transported as securely as possible and must never be left unattended e.g. they must not be placed on luggage racks on public transport, left for short periods of time or left in the boot of a car.

Appendix 8: Teacher surveys

Baseline survey
Eedi baseline teacher survey 2018

Start of Block: Default Question Block

Q1 Thank you for taking the time to complete this survey, your contribution is extremely valuable. This survey is confidential and is being collected for evaluation purposes only. It will not be shared beyond the evaluation team. Neither you nor your school will be identified in reports produced in relation to this study. If you teach maths to both Year 10 and Year 11 you will get a set of questions in relation to each year. By completing the survey, you consent to your data being used for the evaluation. You can withdraw at any point by contacting Kathy Seymour at AlphaPlus (**kathy.seymour@alphaplus.co.uk**).

Q2 During the current academic year, which of the following year groups have you regularly taught maths to? Please tick all that apply

Year 7
Year 8
Year 9 Year 10
Year 11
None of the above

Display This Question:
During the current academic year, which of the following year groups have you regularly taught maths? Year 10
During the current academic year, which of the following year groups have you regularly taught maths? Year 11

Q42 Thank you for taking part, the survey applies to Year 10 and Year 11 maths teachers so we do not need to ask you any further questions.

Skip To: End of Survey Thank you for taking part, the survey applies to Year 10 and Year 11 maths teachers so we do not... Is Displayed

Display This Question:
During the current academic year, which of the following year groups have you regularly taught maths Year 10

Q3 How many Year 10 maths sets do you teach? (groups of students not number of lessons)
▼ 0 ... 10

Display This Question:
During the current academic year, which of the following year groups have you regularly taught maths. = Year 11

Q4 How many Year 11 maths sets do you teach? (groups of students not number of lessons)
▼ 0 ... 10
End of Block: Default Question Block

Start of Block:
Year 10
Display This Question:
During the current academic year, which of the following year groups have you regularly taught maths? Year 10

Q5 About your Year 10 maths teaching

These questions ask for an estimate of time spent in hours and minutes in your most recent full working week. “Full working week” means your last working week covering Monday to Sunday that was not shortened by illness, religious breaks or public holidays.

It may be useful to review your calendar alongside completing the survey.
Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 10

Q6 Maths teaching contact time in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 10

Q7 How long did you spend on timetabled Year 10 maths teaching?
Please only count timetabled Year 10 classroom teaching time. Time spent on preparation, marking, etc. will be recorded later in the survey.

Please record a 0 (zero) if you spent no time on this

	Hours	Minutes
Time spent on timetabled Y10 maths teaching	▼ 0 ... 40	▼ 0 ... 55

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 10

Q8 Maths homework workload in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 10

Q9 How long did you spend on the following Year 10 maths homework activities in your most recent full working week?

Please record a 0 (zero) if you spent no time on a listed activity

Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Preparing Y10 maths homework	▼ 0 ... 50	▼ 0 ... 55
Setting Y10 maths homework (explaining what the students need to do)	▼ 0 ... 50	▼ 0 ... 55
Marking Y10 maths homework	▼ 0 ... 50	▼ 0 ... 55
Recording, chasing and analysing Y10 maths homework data	▼ 0 ... 50	▼ 0 ... 55
Giving verbal (i.e. spoken) feedback to Y10 students based on their maths homework	▼ 0 ... 50	▼ 0 ... 55

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 10

Q10 Other maths activities in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 10

Q11 How long did you spend on the following Year 10 maths activities your most recent full working week?

Please record a 0 (zero) if you spent no time on a listed activity

Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Planning Y10 maths lessons	▼ 0 ... 50	▼ 0 ... 55
Communication with parents and carers regarding Y10 maths performance	▼ 0 ... 50	▼ 0 ... 55

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 10

Q12 In your most recent full working week, how burdensome did you find each Year 10 maths homework task? (Please answer on a scale of 0 to 6, where 0 corresponds to 'not at all burdensome' and 6 corresponds to 'extremely burdensome')

	0 (Not at all burdensome)	1	2	3	4	5	6 (Extremely burdensome)	Not applicable
Preparing Y10 maths homework								
Setting Y10 maths homework (explaining what the students need to do)								
Marking Y10 maths homework								
Recording, chasing and analysing Y10 maths homework data								
Giving verbal (i.e. spoken) feedback to Y10 students based on their maths homework								

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 10

Q13 In your most recent full working week, how burdensome did you find each Year 10 maths non-homework task? (Please answer on a scale of 0 to 6, where 0 corresponds to 'not at all burdensome' and 6 corresponds to 'extremely burdensome')

	0 (Not at all burdensome)	1	2	3	4	5	6 (Extremely burdensome)	Not applicable
Planning Y10 maths lessons								
Communication with parents and carers regarding Y10 maths performance								

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 10

Q14 Please provide any comments you may have on your workload in relation to your Year 10 maths teaching

_____
_____
_____

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 10

Q15 To what extent does Year 10 maths homework performance help you understand student misconceptions?
Extremely unhelpful
Unhelpful
Neither helpful or unhelpful
Helpful
Extremely helpful
Don't know / NA

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 10

Q16 To what extent do you agree or disagree with the following statement?

I feel confident in understanding my Year 10 students' progress over time
Strongly disagree
Disagree
Neither agree nor disagree
Agree
Strongly agree
Don't know / NA

End of Block: Year 10

Start of Block:
Year 11
Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 11

Q17 About your Year 11 maths teaching These questions ask for an estimate of time spent in hours and minutes in your most recent full working week. “Full working week” means your last working week covering Monday to Sunday that was not shortened by illness, religious breaks or public holidays. Please refer to the most recent week of teaching before revision/exams started for your Year 11 class(es) when answering these questions.

It may be useful to review your calendar alongside completing the survey.

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 11

Q18 Maths teaching contact time in the last full week (Year 11)

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 11

Q19 Considering your most recent full working week before the exam period, how long did you spend on timetabled Year 11 maths teaching?
Please only count timetabled Year 11 classroom teaching time. Time spent on preparation, marking, etc. will be recorded later in the survey.
Please record a 0 (zero) if you spent no time on this

	Hours	Minutes
Time spent on timetabled Y11 maths teaching	▼ 0 ... 40	▼ 0 ... 55

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 11
Q20 Maths homework workload in the last full week (Year 11)

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 11

Q21 Considering your most recent full working week before the exam period, how long did you spend on the following Year 11 maths homework activities?

Please record a 0 (zero) if you spent no time on a listed activity

Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Preparing Y11 maths homework	▼ 0 ... 50	▼ 0 ... 55
Setting Y11 maths homework (explaining what the students need to do)	▼ 0 ... 50	▼ 0 ... 55
Marking Y11 maths homework	▼ 0 ... 50	▼ 0 ... 55
Recording, chasing and analysing Y11 maths homework data	▼ 0 ... 50	▼ 0 ... 55
Giving verbal (i.e. spoken) feedback to Y11 students based on their maths homework	▼ 0 ... 50	▼ 0 ... 55

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 11

Q22 Other maths activities in the last full week (Year 11)

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 11

Q23 Considering your most recent full working week before the exam period, how long did you spend on the following Year 11 maths activities?

Please record a 0 (zero) if you spent no time on a listed activity
Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Planning Y11 maths lessons	▼ 0 ... 50	▼ 0 ... 55
Communication with parents and carers regarding Y11 maths performance	▼ 0 ... 50	▼ 0 ... 55

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 11

Q24 Considering your most recent full working week before the exam period, how burdensome did you find each Year 11 maths homework task?

(Please answer on a scale of 0 to 6, where 0 corresponds to 'not at all burdensome' and 6 corresponds to 'extremely burdensome')

	0 (Not at all burdensome)	1	2	3	4	5	6 (Extremely burdensome)	Not applicable
Preparing Y11 maths homework								
Setting Y11 maths homework (explaining what the students need to do)								
Marking Y11 maths homework								
Recording, chasing and analysing Y11 maths homework data								
Giving verbal (i.e. spoken) feedback to Y11 students based on their maths homework								

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 11

Q25 In your most recent full working week, how burdensome did you find each Year 11 maths non-homework task?

(Please answer on a scale of 0 to 6, where 0 corresponds to 'not at all burdensome' and 6 corresponds to 'extremely burdensome')

	0 (Not at all burdensome)	1	2	3	4	5	6 (Extremely burdensome)	Not applicable
Planning Y11 maths lessons								
Communication with parents and carers regarding Y11 maths performance								

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 11

Q26 Please provide any comments you may have on your workload in relation to your Year 11 maths teaching
_____
_____
_____
_____
_____

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 11

Q27 To what extent does Year 11 maths homework performance help you understand student misconceptions?
Extremely unhelpful
Unhelpful
Neither helpful or unhelpful
Helpful
Extremely helpful
Don't know / NA

Display This Question:
If During the current academic year, which of the following year groups have you regularly taught ma... = Year 11

Q28 To what extent do you agree or disagree with the following statement?

I feel confident in understanding my Year 11 students' progress over time
Strongly disagree
Disagree
Neither agree nor disagree
Agree
Strongly agree
Don't know / NA

End of Block: Year 11

Start of Block: Online platforms

Q29 Use of online maths homework platforms

Q30 Do you currently or have you previously used an online maths homework platform with Year 10 and/or 11 students?
Using currently
Previously used, but not currently
Never used with these year groups

Display This Question:
If Do you currently or have you previously used an online maths homework platform with Year 10 and/o... = Using currently

Q31
Which platform(s) do you use?

(Please tick any that apply)
Complete Maths
Eedi
Hegartymaths
Mathletics
MathsWatch
MyMaths
Don’t know / can’t remember
Other (please specify) _____

Display This Question:
If Do you currently or have you previously used an online maths homework platform with Year 10 and/o... = Using currently
And And Which platform(s) do you use? (Please tick any that apply) q://QID52/SelectedChoicesCount Is Greater Than or Equal to 1
And Which platform(s) do you use? (Please tick any that apply) != Don't know / can't remember

Q32 How regularly would you say you currently use the online maths homework platform(s)?

	Once a week or more often	Several times a term	Occasionally	Rarely	Not at all
Which platform(s) do you use? (Please tick any that apply) = Complete Maths Complete Maths					
Which platform(s) do you use? (Please tick any that apply) = Eedi Eedi					
Which platform(s) do you use? (Please tick any that apply) = Hegartymaths Hegartymaths					
Which platform(s) do you use? (Please tick any that apply) = Mathletics Mathletics					
Which platform(s) do you use? (Please tick any that apply) = MathsWatch MathsWatch					
Which platform(s) do you use? (Please tick any that apply) = MyMaths MyMaths					
Which platform(s) do you use? (Please tick any that apply) = Other (please specify) Other (${Q31/ChoiceTextEntryValue/8})					

Display This Question:
If Do you currently or have you previously used an online maths homework platform with Year 10 and/o... = Using currently
And Which platform(s) do you use? (Please tick any that apply) q://QID52/SelectedChoicesCount Is Greater Than or Equal to 1
And Which platform(s) do you use? (Please tick any that apply) != Don't know / can't remember

Q33 Which features do you find most useful?
_____
_____
_____

Display This Question:
If Do you currently or have you previously used an online maths homework platform with Year 10 and/o... = Previously used, but not currently

Q34
Which platform(s) did you use? (Please tick any that apply)
Complete Maths
Eedi
Hegartymaths
Mathletics
MathsWatch
MyMaths
Don't know / can't remember
Other (please specify) _____

Display This Question:
If Do you currently or have you previously used an online maths homework platform with Year 10 and/o... = Previously used, but not currently

Q35 Please briefly explain why you stopped using the maths homework platform(s)
_____
_____
_____
_____
_____

End of Block: Online platforms

Start of Block: About you

Q36 About you

Q37
For how many years have you..?
(Please indicate to the nearest year)

Been a teacher	▼ Less than one year ... More than 30 years
Worked in your current school	▼ Less than one year ... More than 30 years
Been in your current role	▼ Less than one year ... More than 30 years

Q38 Which one of these best describes your main role at your current school?
Classroom teacher
Head of Department
Head of Year
Deputy or Assistant Head
Headteacher / Acting Headteacher
Other (please specify) _____

Q39 Are you a Newly Qualified Teacher (NQT)?
Yes
No

Q40 Would you describe yourself as a maths specialist teacher?
Yes
No

Q41 Are you contracted to work?
Full time
Part time

End of Block: About you

Survey 2- Intervention
Eedi Intervention 2nd teacher survey Nov-Dec 18

Start of Block: Default Question Block

Q1 Thank you for taking the time to complete this survey, your contribution is extremely valuable. This survey is confidential and is being collected for evaluation purposes only. It will not be shared beyond the evaluation team. Neither you nor your school will be identified in reports produced in relation to this study.

By completing the survey you consent to your data being used for the evaluation. You can withdraw at any point by contacting Kathy Seymour at AlphaPlus (**kathy.seymour@alphaplus.co.uk**).

Q2 During the current academic year, which of the following year groups do you regularly teach maths to? Please tick all that apply

Year 7
Year 8
Year 9
Year 10
Year 11
None of the above

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... != Year 10
Q42 Thank you for taking part, the survey applies to Year 10 maths teachers so we do not need to ask you any further questions.
Skip To: End of Survey If Thank you for taking part, the survey applies to Year 10 maths teachers so we do not need to ask...() Is Displayed

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q3 How many Year 10 maths sets do you teach? (groups of students not number of lessons)
▼ 1 ... 10

End of Block: Default Question Block

Start of Block: Year 10
Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q5 About your Year 10 maths teaching

These questions ask for an estimate of time spent in hours and minutes in your most recent full working week. “Full working week” means your last working week covering Monday to Sunday that was not shortened by illness, religious breaks or public holidays.

It may be useful to review your calendar alongside completing the survey.

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q6 Maths teaching contact time in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q7 How long did you spend on timetabled Year 10 maths teaching?
Please only count timetabled Year 10 classroom teaching time. Time spent on preparation, marking, etc. will be recorded later in the survey.

Please record a 0 (zero) if you spent no time on this

	Hours	Minutes
Time spent on timetabled Y10 maths teaching	▼ 0 ... 40	▼ 0 ... 55

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q8 Maths homework workload in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q9 How long did you spend on the following Year 10 maths homework activities in your most recent full working week?

Please record a 0 (zero) if you spent no time on a listed activity

Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Preparing Y10 maths homework	▼ 0 ... 50	▼ 0 ... 55
Setting Y10 maths homework (explaining what the students need to do)	▼ 0 ... 50	▼ 0 ... 55
Marking Y10 maths homework	▼ 0 ... 50	▼ 0 ... 55
Recording, chasing and analysing Y10 maths homework data	▼ 0 ... 50	▼ 0 ... 55
Giving verbal (i.e. spoken) feedback to Y10 students based on their maths homework	▼ 0 ... 50	▼ 0 ... 55

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q10 Other maths activities in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q11 How long did you spend on the following Year 10 maths activities your most recent full working week?

Please record a 0 (zero) if you spent no time on a listed activity

Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Planning Y10 maths lessons	▼ 0 ... 50	▼ 0 ... 55
Communication with parents and carers regarding Y10 maths performance	▼ 0 ... 50	▼ 0 ... 55
Writing reports on Y10 students' maths performance	▼ 0 ... 50	▼ 0 ... 55

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q12
In your most recent full working week, how burdensome did you find each Year 10 maths homework task?

(Please answer on a scale of 0 to 6, where 0 corresponds to 'not at all burdensome' and 6 corresponds to 'extremely burdensome')

	0 (Not at all burdensome)	1	2	3	4	5	6 (Extremely burdensome)	Not applicable
Preparing Y10 maths homework								
Setting Y10 maths homework (explaining what the students need to do)								
Marking Y10 maths homework								
Recording, chasing and analysing Y10 maths homework data								
Giving verbal (i.e. spoken) feedback to Y10 students based on their maths homework								

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q13
In your most recent full working week, how burdensome did you find each Year 10 maths non-homework task?

(Please answer on a scale of 0 to 6, where 0 corresponds to 'not at all burdensome' and 6 corresponds to 'extremely burdensome')

	0 (Not at all burdensome)	1	2	3	4	5	6 (Extremely burdensome)	Not applicable
Planning Y10 maths lessons								
Communication with parents and carers regarding Y10 maths performance								
Writing reports on Y10 students' maths performance								

End of Block: Year 10

Start of Block: Intervention School Qs

Q44 Eedi training

Q45 Did you attend the Eedi training session held at your school last term or earlier this term?
Yes, an Eedi led session
Yes, a session led by a teacher in my school who attended an Eedi session
No
Don't know / can't remember

Display This Question:
If Did you attend the Eedi training session held at your school last term or earlier this term? = Yes, an Eedi led session
Or Did you attend the Eedi training session held at your school last term or earlier this term? = Yes, a session led by a teacher in my school who attended an Eedi session

Q45 To what extent do you agree or disagree with the following statements about the training session?

	Strongly agree	Agree	Disagree	Strongly disagree	Don't know / NA
Overall, the training session was useful					
The training session was pitched at the right level for me					
I could have set-up and started using Eedi without an in-person training session (i.e. with online or telephone instructions and technical support where needed)					

Display This Question:
If Did you attend the Eedi training session held at your school last term or earlier this term? = Yes, an Eedi led session
Or Did you attend the Eedi training session held at your school last term or earlier this term? = Yes, a session led by a teacher in my school who attended an Eedi session

Q46 Please use the space below to comment on any of the responses you have given above or to add and further thoughts on the training session:

_____
_____
_____
_____
_____

Q48 Your use of Eedi

Q53 Overall, would you say that you are making full use of the platform (for example, by setting the specified number of quizzes, by using the feedback mechanisms, etc.)?
I am making full use of the platform
I am making partial use of the platform
I am not using the platform
Unsure

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q54 Please briefly describe below your use of the platform, and why you are making partial use of it. Please also suggest anything that could be changed about the platform or the support offered that might assist you in using it more fully:

_____
_____
_____
_____

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q47 Please indicate whether you have used / enabled the following functions on Eedi:

	Yes	No	Unsure
Have you connected your scheme of work to Eedi?			
Are you using the Eedi platform to send your students a multiple-choice quiz at the end of a topic?			
Have you set follow-up questions for students based on student performance in the multiple choice quiz?			
Are you monitoring the student data provided by Eedi?			
Have you enabled the parental update function?			

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am not using the platform

Q55 Please briefly describe below why you are not using Eedi and whether anything could be changed about the platform or the support offered that might assist you in starting to use it:
_____
_____
_____

Q29 Use of other online maths homework platforms

Q30 Do you currently use an online maths homework platform, other than Eedi, with Year 10 students?
Yes
No

Display This Question:
If Do you currently use an online maths homework platform, other than Eedi, with Year 10 students? = Yes

Q31 Which platform(s) do you use?

(Please tick any that apply)
Complete Maths
Hegartymaths
Mathletics
MathsWatch
MyMaths
Don’t know / can’t remember
Other (please specify) _____

Display This Question:
If Do you currently use an online maths homework platform, other than Eedi, with Year 10 students? = Yes
And Which platform(s) do you use? (Please tick any that apply) q://QID52/SelectedChoicesCount Is Greater Than or Equal to 1
And Which platform(s) do you use? (Please tick any that apply) != Don’t know / can’t remember

Q32 How regularly would you say you currently use the online maths homework platform(s)?

	Once a week or more often	Several times a term	Occasionally	Rarely	Not at all
Which platform(s) do you use? (Please tick any that apply) = Complete Maths Complete Maths					
Which platform(s) do you use? (Please tick any that apply) = Hegartymaths Hegartymaths					
Which platform(s) do you use? (Please tick any that apply) = Mathletics Mathletics					
Which platform(s) do you use? (Please tick any that apply) = MathsWatch MathsWatch					
Which platform(s) do you use? (Please tick any that apply) = MyMaths MyMaths					
Which platform(s) do you use? (Please tick any that apply) = Other (please specify) Other (${Q31/ChoiceTextEntryValue/8})					

Display This Question:
If Do you currently use an online maths homework platform, other than Eedi, with Year 10 students? = Yes

And Which platform(s) do you use? (Please tick any that apply) q://QID52/SelectedChoicesCount Is Greater Than or Equal to 1
And Which platform(s) do you use? (Please tick any that apply) != Don't know / can't remember

Q33 Which features do you find most useful?
_____
_____
_____
_____
_____

Display This Question:
If Do you currently use an online maths homework platform, other than Eedi, with Year 10 students? = Yes

Q57 Please indicate whether the following functions are available / have been used on the online platform you use for Y10 maths homework:

	Yes	No	Unsure
Have you connected your scheme of work to it?			
Does it send your students a multiple-choice quiz at the end of a topic?			
Does it send your students a multiple-choice quiz three weeks following the end of a topic?			
Have you set follow-up questions for students based on student performance in the multiple choice quiz?			
Does it help you identify student misconceptions?			
Does it send you alerts on student completion?			
Does it send parents updates?			

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q58 Does Eedi support you in identifying student misconceptions in their maths homework?
Yes
No
Don't know

Display This Question:
If Does Eedi support you in identifying student misconceptions in their maths homework? = Yes

Q59 If yes, how does Eedi do this?
_____
_____
_____
_____
_____

Display This Question:
If Does Eedi support you in identifying student misconceptions in their maths homework? = Yes

Q60 When you identify a misconception what action do you take?
_____

_____
_____
_____
_____

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q61 Since starting to use the Eedi platform, have you noticed any changes in the following areas of your maths teaching (for the current Year 10 cohort)?

	Yes, a major positive change (things have got a lot better)	Yes, a minor positive change (things have got slightly better)	No change	Yes, a minor negative change (things have got slightly worse)	Yes, a major negative change (things have got a lot worse)	Don't know / can't say
Year 10 maths homework completion rate						
Year 10 students' understanding of common misconceptions in maths						
Year 10 students' general levels of engagement with maths						
Year 10 students' levels of attainment in maths (over and above what you might have expected from a Y10 cohort at this stage in the year)						
Your confidence in addressing misconceptions in maths with Y10 students						
Parental awareness / engagement with their child's maths learning						

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q62 Please use the space below to elaborate on any of your answers above, for example, to describe any of the changes you have noticed:

_____
_____
_____
_____
_____

End of Block: Is Eedi delivering

Start of Block: About you

Q36 About you

Q37 For how many years have you..?
(Please indicate to the nearest year)

Been a teacher	▼ Less than one year ... More than 30 years
Worked in your current school	▼ Less than one year ... More than 30 years
Been in your current role	▼ Less than one year ... More than 30 years

Q38 Which one of these best describes your main role at your current school?
Classroom teacher
Head of Department
Head of Year
Deputy or Assistant Head
Headteacher / Acting Headteacher
Other (please specify) _____

Q39 Are you a Newly Qualified Teacher (NQT)?
Yes
No

Q40 Would you describe yourself as a maths specialist teacher?
Yes
No

Q41 Are you contracted to work?
Full time
Part time

Survey 2- Control
Eedi Control 2nd teacher survey Nov-Dec 18

Start of Block: Default Question Block

Q1 Thank you for taking the time to complete this survey, your contribution is extremely valuable. This survey is confidential and is being collected for evaluation purposes only. It will not be shared beyond the evaluation team. Neither you nor your school will be identified in reports produced in relation to this study.
By completing the survey you consent to your data being used for the evaluation. You can withdraw at any point by contacting Kathy Seymour at AlphaPlus (**kathy.seymour@alphaplus.co.uk**).

Q2 During the current academic year, which of the following year groups do you regularly teach maths to?
Please tick all that apply

Year 7 (1)
Year 8 (2)
Year 9 (3)
Year 10 (4)
Year 11 (5)
None of the above (6)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... != Year 10

Q42 Thank you for taking part, the survey applies to Year 10 maths teachers so we do not need to ask you any further questions.

Skip To: End of Survey If Thank you for taking part, the survey applies to Year 10 maths teachers so we do not need to ask...() Is Displayed

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q3 How many Year 10 maths sets do you teach? (groups of students not number of lessons)
▼ 1 (2) ... 10 (11)

End of Block: Default Question Block

Start of Block: Year 10
Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q5 About your Year 10 maths teaching

These questions ask for an estimate of time spent in hours and minutes in your most recent full working week. “Full working week” means your last working week covering Monday to Sunday that was not shortened by illness, religious breaks or public holidays.

It may be useful to review your calendar alongside completing the survey.

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q6 Maths teaching contact time in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q7 How long did you spend on timetabled Year 10 maths teaching?
Please only count timetabled Year 10 classroom teaching time. Time spent on preparation, marking, etc. will be recorded later in the survey.

Please record a 0 (zero) if you spent no time on this

	Hours	Minutes
Time spent on timetabled Y10 maths teaching (1)	▼ 0 (1 ... 40 (41)	▼ 0 (1 ... 55 (12)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q8 Maths homework workload in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q9 How long did you spend on the following Year 10 maths homework activities in your most recent full working week?

Please record a 0 (zero) if you spent no time on a listed activity

Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Preparing Y10 maths homework (1)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Setting Y10 maths homework (explaining what the students need to do) (2)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Marking Y10 maths homework (3)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Recording, chasing and analysing Y10 maths homework data (4)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Giving verbal (i.e. spoken) feedback to Y10 students based on their maths homework (5)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q10 Other maths activities in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q11 How long did you spend on the following Year 10 maths activities your most recent full working week?

Please record a 0 (zero) if you spent no time on a listed activity

Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Planning Y10 maths lessons (1)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Communication with parents and carers regarding Y10 maths performance (2)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Writing reports on Y10 students' maths performance (3)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q12 In your most recent full working week, how burdensome did you find each Year 10 maths homework task?

(Please answer on a scale of 0 to 6, where 0 corresponds to 'not at all burdensome' and 6 corresponds to 'extremely burdensome')

	0 (Not at all burdensome) (1)	1 (2)	2 (3)	3 (4)	4 (5)	5 (6)	6 (Extremely burdensome) (7)	Not applicable (8)
Preparing Y10 maths homework (1)								
Setting Y10 maths homework (explaining what the students need to do) (2)								
Marking Y10 maths homework (3)								
Recording, chasing and analysing Y10 maths homework data (4)								
Giving verbal (i.e. spoken) feedback to Y10 students based on their maths homework (5)								

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q13
In your most recent full working week, how burdensome did you find each Year 10 maths non-homework task?

(Please answer on a scale of 0 to 6, where 0 corresponds to 'not at all burdensome' and 6 corresponds to 'extremely burdensome')

	0 (Not at all burdensome) (1)	1 (2)	2 (3)	3 (4)	4 (5)	5 (6)	6 (Extremely burdensome) (7)	Not applicable (8)
Planning Y10 maths lessons (1)								
Communication with parents and carers regarding Y10 maths performance (2)								
Writing reports on Y10 students' maths performance (3)								

End of Block: Year 10
Start of Block: Online platforms
Q29 Use of other online maths homework platforms

Q30 Do you currently use an online maths homework platform with Year 10 students?
Yes (1)
No (2)

Display This Question:
If Do you currently use an online maths homework platform with Year 10 students? = Yes

Q31 Which platform(s) do you use?
(Please tick any that apply)
Complete Maths (1)
Hegartymaths (3)
Mathletics (4)
MathsWatch (5)
MyMaths (6)
Don’t know / can’t remember (7)
Other (please specify) (8) _____

Display This Question:
If Do you currently use an online maths homework platform with Year 10 students? = Yes
And Which platform(s) do you use? (Please tick any that apply) q://QID52/SelectedChoicesCount Is Greater Than or Equal to 1
And Which platform(s) do you use? (Please tick any that apply) != Don't know / can't remember

Q32 How regularly would you say you currently use the online maths homework platform(s)?

	Once a week or more often (1)	Several times a term (2)	Occasionally (3)	Rarely (4)	Not at all (5)
Which platform(s) do you use? (Please tick any that apply) = Complete Maths Complete Maths (1)					
Which platform(s) do you use? (Please tick any that apply) = Hegartymaths Hegartymaths (3)					
Which platform(s) do you use? (Please tick any that apply) = Mathletics Mathletics (4)					
Which platform(s) do you use? (Please tick any that apply) = MathsWatch MathsWatch (5)					
Which platform(s) do you use? (Please tick any that apply) = MyMaths MyMaths (6)					
Which platform(s) do you use? (Please tick any that apply) = Other (please specify) Other (${Q31/ChoiceTextEntryValue/8}) (7)					

Display This Question:
If Do you currently use an online maths homework platform with Year 10 students? = Yes
And Which platform(s) do you use? (Please tick any that apply) q://QID52/SelectedChoicesCount Is Greater Than or Equal to 1
And Which platform(s) do you use? (Please tick any that apply) != Don't know / can't remember

Q33 Which features do you find most useful?

_____
_____
_____
_____
_____

Display This Question:
If Do you currently use an online maths homework platform with Year 10 students? = Yes

Q57 Please indicate whether the following functions are available / have been used on the online platform you use for Y10 maths homework:

	Yes (1)	No (2)	Unsure (4)
Have you connected your scheme of work to it? (1)			
Does it send your students a multiple-choice quiz at the end of a topic? (2)			
Does it send your students a multiple-choice quiz three weeks following the end of a topic? (3)			
Have you set follow-up questions for students based on student performance in the multiple choice quiz? (4)			
Does it help you identify student misconceptions? (5)			
Does it send you alerts on student completion? (6)			
Does it send parents updates? (7)			

End of Block: Online platforms

Start of Block: About you

Q36 About you
Q37 For how many years have you..?
(Please indicate to the nearest year)

Been a teacher (1)	▼ Less than one year (1) ... More than 30 years (32)
Worked in your current school (2)	▼ Less than one year (1) ... More than 30 years (32)
Been in your current role (3)	▼ Less than one year (1) ... More than 30 years (32)

Q38 Which one of these best describes your main role at your current school?
Classroom teacher (1)
Head of Department (2)
Head of Year (3)
Deputy or Assistant Head (4)
Headteacher / Acting Headteacher (5)
Other (please specify) (6) _____

Q39 Are you a Newly Qualified Teacher (NQT)?
Yes (1)
No (2)

Q40 Would you describe yourself as a maths specialist teacher?
Yes (1)
No (2)

Q41 Are you contracted to work?
Full time (1)
Part time (2)

End of Block: About you

Survey 3- Intervention
Eedi Intervention 3rd teacher survey March 2019

Start of Block: Default Question Block

Q1 Thank you for taking the time to complete this survey, your contribution is extremely valuable. This survey is confidential and is being collected for evaluation purposes only. It will not be shared beyond the evaluation team. Neither you nor your school will be identified in reports produced in relation to this study.
By completing the survey you consent to your data being used for the evaluation. You can withdraw at any point by contacting Kathy Seymour at AlphaPlus (**kathy.seymour@alphaplus.co.uk**).
Some of the questions were also included in the December survey, this is because we are looking at change over time.

Q2 During the current academic year, which of the following year groups do you regularly teach maths to?
Please tick all that apply

Year 7 (1)
Year 8 (2)
Year 9 (3)
Year 10 (4)
Year 11 (5)
⊗None of the above (6)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... != Year 10

Q42 Thank you for taking part, the survey applies to Year 10 maths teachers so we do not need to ask you any further questions.

Skip To: End of Survey If Thank you for taking part, the survey applies to Year 10 maths teachers so we do not need to ask...() Is Displayed

Q41 Please provide the following information about you and your school:

Your first name:

_____

Q43 Your surname:
_____

Q45 Your email address:

_____

Q47 The name of your school:
_____

Q49 The town, city or area in which your school is located:
_____
Q51 Your school's URN (unique reference number - a six digit number starting with '1')
Please leave blank if not known
_____

Q53 The information provided above will be used only for the purposes of this evaluation and will not be passed to anyone outside of the AlphaPlus and Manchester Metropolitan University research team. The data will be handled and stored securely and in accordance with the Data Protection Act and the General Data Protection Regulation (GDPR). Individuals and their schools will not be identified in any reports or other outputs from this evaluation. Teacher email address is used for merging purposes only, you will not be sent any communication directly to this address, all Eedi evaluation surveys are circulated via your school's Eedi lead.

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q3 How many Year 10 maths sets do you teach? (groups of students not number of lessons)

▼ 1 (2) ... 10 (11)

End of Block: Default Question Block

Start of Block: Year 10
Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q5 About your Year 10 maths teaching

These questions ask for an estimate of time spent in hours and minutes in your most recent full working week. “Full working week” means your last working week covering Monday to Sunday that was not shortened by illness, religious breaks or public holidays.

It may be useful to review your calendar alongside completing the survey.

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q6 Maths teaching contact time in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q7 How long did you spend on timetabled Year 10 maths teaching?
Please only count timetabled Year 10 classroom teaching time. Time spent on preparation, marking, etc. will be recorded later in the survey.

Please record a 0 (zero) if you spent no time on this

	Hours	Minutes
Time spent on timetabled Y10 maths teaching (1)	▼ 0 (1 ... 40 (41)	▼ 0 (1 ... 55 (12)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q8 Maths homework workload in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q9 How long did you spend on the following Year 10 maths homework activities in your most recent full working week?

Please record a 0 (zero) if you spent no time on a listed activity

Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Preparing Y10 maths homework (1)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Setting Y10 maths homework (explaining what the students need to do) (2)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Marking Y10 maths homework (3)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Recording, chasing and analysing Y10 maths homework data (4)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Giving verbal (i.e. spoken) feedback to Y10 students based on their maths homework (5)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q10 Other maths activities in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q11 How long did you spend on the following Year 10 maths activities in your most recent full working week?

Please record a 0 (zero) if you spent no time on a listed activity
Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Planning Y10 maths lessons (1)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Communication with parents and carers regarding Y10 maths performance (2)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Writing reports on Y10 students' maths performance (3)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)

End of Block: Year 10

Start of Block: Intervention School Qs

Q48 Your use of Eedi

Q53 Overall, would you say that you are making full use of the platform (for example, by setting the specified number of quizzes, by using the feedback mechanisms, etc.)?
I am making full use of the platform (1)
I am making partial use of the platform (2)
I am not using the platform (3)
Unsure (4)

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q63 How often did you use Eedi to set Year 10 maths homework since the beginning of term (January 2019)?
Every time I set homework (1)
Most of the time (6)
Sometimes (7)
Rarely (8)
Never (9)

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q64 Have you changed the way in which you use the Eedi platform since the beginning of the autumn term?
Yes (1)
No (2)
Don't know (3)

Display This Question:
If Have you changed the way in which you use the Eedi platform since the beginning of the autumn term? = Yes

Q65 Please briefly describe how you have changed the way you use the platform, and if possible, the reasons for making the change(s):
_____
_____
_____
_____
_____

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q47 Please indicate whether you have used / enabled the following functions on Eedi:

	Yes (1)	No (2)	Unsure (4)
Have you connected your scheme of work to Eedi? (1)			
Are you using the Eedi platform to send your students a multiple-choice quiz at the end of a topic? (2)			
Have you set follow-up questions for students based on student performance in the multiple choice quiz? (3)			
Are you monitoring the student data provided by Eedi? (4)			
Have you enabled the parental update function? (5)			

End of Block: Intervention School Qs

Start of Block: Online platforms

Q29 Use of other online maths homework platforms

Q30 Do you currently use an online maths homework platform, other than Eedi, with Year 10 students?
Yes (1)
No (2)

Display This Question:
If Do you currently use an online maths homework platform, other than Eedi, with Year 10 students? = Yes

Q32 Which platform(s) do you use?

(Please indicate how often you use any that apply)

	Once a week or more often (1)	Several times a term (2)	Occasionally (3)	Rarely (4)	Not at all (5)
Complete Maths (1)					
Hegartymaths (3)					
Mathletics (4)					
MathsWatch (5)					
MyMaths (6)					
Other, please specify: (7)					

Display This Question:
If Do you currently use an online maths homework platform, other than Eedi, with Year 10 students? = Yes

Q57 Please indicate whether the following functions are available / have been used on the other (non-Eedi) online platform(s) you use for Y10 maths homework:

	Yes (1)	No (2)	Unsure (4)
Have you connected your scheme of work to it? (1)			

Does it send your students a multiple-choice quiz at the end of a topic? (2)			
Does it send your students a multiple-choice quiz three weeks following the end of a topic? (3)			
Have you set follow-up questions for students based on student performance in the multiple choice quiz? (4)			
Does it help you identify student misconceptions? (5)			
Does it send you alerts on student completion? (6)			
Does it send parents updates? (7)			

End of Block: Online platforms

Start of Block: Is Eedi delivering

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q66 To what extent are your Year 10 maths students engaging with the Eedi platform?
_____
_____
_____
_____

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q58 Does Eedi support you in identifying student misconceptions in their maths homework?
Yes (1)
No (2)
Don't know (3)

Display This Question:
If Does Eedi support you in identifying student misconceptions in their maths homework? = Yes

Q59 If yes, how does Eedi do this?
_____
_____
_____
_____

Display This Question:
If Does Eedi support you in identifying student misconceptions in their maths homework? = Yes

Q60 When you identify a misconception what action do you take?
_____
_____
_____
_____

_____

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q61 Since starting to use the Eedi platform, have you noticed any changes in the following areas of your maths teaching (for the current Year 10 cohort)?

	Yes, a major positive change (things have got a lot better) (1)	Yes, a minor positive change (things have got slightly better) (7)	No change (8)	Yes, a minor negative change (things have got slightly worse) (9)	Yes, a major negative change (things have got a lot worse) (10)	Don't know / can't say (11)
Year 10 maths homework completion rate (1)						
Year 10 students' understanding of common misconceptions in maths (7)						
Year 10 students' general levels of engagement with maths (8)						
Year 10 students' levels of attainment in maths (over and above what you might have expected from a Y10 cohort at this stage in the year) (9)						
Your confidence in addressing misconceptions in maths with Y10 students (10)						
Parental awareness / engagement with their child's maths learning (11)						

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q67 Overall, which, if any, Eedi features do you find useful?

_____
_____
_____
_____
_____

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q68 Overall, which, if any, Eedi features would you like to change?

_____
_____

End of Block: Is Eedi delivering

Start of Block: About you

Q36 About you

Q37 For how many years have you..? (Please indicate to the nearest year)	
Been a teacher (1)	▼ Less than one year (1) ... More than 30 years (32)
Worked in your current school (2)	▼ Less than one year (1) ... More than 30 years (32)
Been in your current role (3)	▼ Less than one year (1) ... More than 30 years (32)

Q38 Which one of these best describes your main role at your current school?
Classroom teacher (1)
Head of Department (2)
Head of Year (3)
Deputy or Assistant Head (4)
Headteacher / Acting Headteacher (5)
Other (please specify) (6) _____

Q39 Are you a Newly Qualified Teacher (NQT)?
Yes (1)
No (2)

Q40 Would you describe yourself as a maths specialist teacher?
Yes (1)
No (2)

Q41 Are you contracted to work?
Full time (1)
Part time (2)

Q99 Are you..?
Female (1)
Male (2)
Prefer not to say (4)

End of Block: About you

Survey 3- Control
Eedi Control 3rd teacher survey March 2019

Start of Block: Default Question Block

Q1 Thank you for taking the time to complete this survey, your contribution is extremely valuable. This survey is confidential and is being collected for evaluation purposes only. It will not be shared beyond the evaluation team. Neither you nor your school will be identified in reports produced in relation to this study.
By completing the survey you consent to your data being used for the evaluation. You can withdraw at any point by contacting Kathy Seymour at AlphaPlus (**kathy.seymour@alphaplus.co.uk**).
Some of the questions were also included in the December survey, this is because we are looking at change over time.

Q2 During the current academic year, which of the following year groups do you regularly teach maths to?
Please tick all that apply

Year 7 (1)
Year 8 (2)
Year 9 (3)
Year 10 (4)
Year 11 (5)
⊗None of the above (6)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... != Year 10

Q42 Thank you for taking part, the survey applies to Year 10 maths teachers so we do not need to ask you any further questions.

Skip To: End of Survey If Thank you for taking part, the survey applies to Year 10 maths teachers so we do not need to ask...() Is Displayed

Q40 Please provide the following information about you and your school:
Your first name:
_____

Q41 Your surname:
_____

Q42 Your email address:
_____

Q43 The name of your school:
_____

Q44 The town, city or area in which your school is located:
_____

Q45 Your school's URN (unique reference number - a six digit number starting with '1')
Please leave blank if not known
_____

Q46 The information provided above will be used only for the purposes of this evaluation and will not be passed to anyone outside of the AlphaPlus and Manchester Metropolitan University research team. The data will be handled and stored securely and in accordance with the Data Protection Act and the General Data Protection Regulation (GDPR). Individuals and their schools will not be identified in any reports or other outputs from this evaluation. Teacher email address is used for merging purposes only, you will not be sent any communication directly to this address, all Eedi evaluation surveys are circulated via your schools Eedi lead.

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q3 How many Year 10 maths sets do you teach? (groups of students not number of lessons)
▼ 1 (2) ... 10 (11)

End of Block: Default Question Block

Start of Block: Year 10

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q5 About your Year 10 maths teaching

These questions ask for an estimate of time spent in hours and minutes in your most recent full working week. “Full working week” means your last working week covering Monday to Sunday that was not shortened by illness, religious breaks or public holidays.

It may be useful to review your calendar alongside completing the survey.

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q6 Maths teaching contact time in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q7 How long did you spend on timetabled Year 10 maths teaching?
Please only count timetabled Year 10 classroom teaching time. Time spent on preparation, marking, etc. will be recorded later in the survey.

Please record a 0 (zero) if you spent no time on this

	Hours	Minutes
Time spent on timetabled Y10 maths teaching (1)	▼ 0 (1 ... 40 (41)	▼ 0 (1 ... 55 (12)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q8 Maths homework workload in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q9 How long did you spend on the following Year 10 maths homework activities in your most recent full working week?

Please record a 0 (zero) if you spent no time on a listed activity

Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Preparing Y10 maths homework (1)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Setting Y10 maths homework (explaining what the students need to do) (2)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Marking Y10 maths homework (3)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Recording, chasing and analysing Y10 maths homework data (4)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Giving verbal (i.e. spoken) feedback to Y10 students based on their maths homework (5)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q10 Other maths activities in the last full week (Year 10)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 10

Q11 How long did you spend on the following Year 10 maths activities in your most recent full working week?

Please record a 0 (zero) if you spent no time on a listed activity

Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Planning Y10 maths lessons (1)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Communication with parents and carers regarding Y10 maths performance (2)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Writing reports on Y10 students' maths performance (3)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)

End of Block: Year 10

Start of Block: Online platforms

Q29 Use of other online maths homework platforms

Q30 Do you currently use an online maths homework platform with Year 10 students?
Yes (1)
No (2)

Display This Question:
If Do you currently use an online maths homework platform with Year 10 students? = Yes

Q32 Which platform(s) do you use?
(Please tick how often you use any that apply)

	Once a week or more often (1)	Several times a term (2)	Occasionally (3)	Rarely (4)	Not at all (5)
Complete Maths (1)					
Hegartymaths (3)					
Mathletics (4)					
MathsWatch (5)					
MyMaths (6)					
Other, please specify: (7)					

Display This Question:
If Do you currently use an online maths homework platform with Year 10 students? = Yes

Q57 Please indicate whether the following functions are available / have been used on the online platform(s) you use for Y10 maths homework:

	Yes (1)	No (2)	Unsure (4)
Have you connected your scheme of work to it? (1)			
Does it send your students a multiple-choice quiz at the end of a topic? (2)			
Does it send your students a multiple-choice quiz three weeks following the end of a topic? (3)			
Have you set follow-up questions for students based on student performance in the multiple choice quiz? (4)			
Does it help you identify student misconceptions? (5)			
Does it send you alerts on student completion? (6)			
Does it send parents updates? (7)			

End of Block: Online platforms

Start of Block: About you
Q36 About you

Q37 For how many years have you..? (Please indicate to the nearest year)	
Been a teacher (1)	▼ Less than one year (1) ... More than 30 years (32)
Worked in your current school (2)	▼ Less than one year (1) ... More than 30 years (32)
Been in your current role (3)	▼ Less than one year (1) ... More than 30 years (32)

Q38 Which one of these best describes your main role at your current school?
Classroom teacher (1)
Head of Department (2)
Head of Year (3)
Deputy or Assistant Head (4)
Headteacher / Acting Headteacher (5)
Other (please specify) (6) _____

Q39 Are you a Newly Qualified Teacher (NQT)?
Yes (1)
No (2)

Q40 Would you describe yourself as a maths specialist teacher?
Yes (1)
No (2)

Q41 Are you contracted to work?
Full time (1)
Part time (2)

Q99 Are you..?
Female (1)
Male (2)
Prefer not to say (4)

End of Block: About you

Survey 4- Intervention
Eedi Intervention 4th teacher survey March 2020

Start of Block: Default Question Block

Q1 Thank you for taking the time to complete this survey, your contribution is extremely valuable. This survey is confidential and is being collected for evaluation purposes only. It will not be shared beyond the evaluation team. Neither you nor your school will be identified in reports produced in relation to this study.
By completing the survey you consent to your data being used for the evaluation. You can withdraw at any point by contacting Kathy Seymour at AlphaPlus (**kathy.seymour@alphaplus.co.uk**).
Some of the questions were also included in the March 2019 survey, this is because we are looking at change over time.

Q54 Are you the Eedi lead for your school?
Yes (1)
No (2)
End of Block: Default Question Block

Start of Block: Eedi lead cost Qs
Q55 It is assumed that the Eedi training took place outside teaching time, did the Eedi training require any teacher cover?
Yes (1)
No (4)

Q56 The Education Endowment Foundation (EEF) is interested in the time devoted by schools to training, preparation and delivery. Please tell us how many hours on average, per teacher were dedicated to the following activities relating to your involvement in the Eedi trial: Eedi training sessions at your school?

Year 1 (2018-19 academic year) (1)	▼ 0 (14) ... More than 10 (32)
Year 2 (2019-20 academic year) (2)	▼ 0 (14) ... More than 10 (32)

Q59 Syncing Eedi to the scheme of work? This could have been done by the teacher or by you as the Eedi lead.

Year 1 (2018-19 academic year) (1)	▼ 0 (22) ... More than 10 (33)
Year 2 (2019-20 academic year) (2)	▼ 0 (22) ... More than 10 (33)

Q60 Setting up the parental function?

Year 1 (2018-19 academic year) (1)	▼ 0 (1) ... More than 10 (32)
Year 2 (2019-20 academic year) (2)	▼ 0 (1) ... More than 10 (32)

Q61 Any other preparation activities? (excluding training)

Year 1 (2018-19 academic year) (1)	▼ 0 (1) ... More than 10 (32)
Year 2 (2019-20 academic year) (2)	▼ 0 (1) ... More than 10 (32)

Q62 Other costs

Q63 Did your school purchase any facilities, equipment or materials to use Eedi that would not have been purchased if you were not using Eedi? (for example, computers for students who do not have access at home)
Yes (1)
No (2)

Display This Question:
If Did your school purchase any facilities, equipment or materials to use Eedi that would not have b... = Yes

Q64 If yes, please specify the resource(s) and the total cost
_____
_____
_____
_____
_____

End of Block: Eedi lead cost Qs

Start of Block: Which year group taught

Q2
During the current academic year, which of the following year groups do you regularly teach maths to?
Please tick all that apply

Year 7 (1)
Year 8 (2)
Year 9 (3)
Year 10 (4)
Year 11 (5)
None of the above (6)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q3 How many Year 11 maths sets do you teach? (groups of students not number of lessons)
▼ 1 (2) ... 10 (11)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... != Year 11

Q42 Thank you for taking part, the remainder of the survey applies to Year 11 maths teachers so we do not need to ask you any further questions.

Skip To: End of Survey If Thank you for taking part, the remainder of the survey applies to Year 11 maths teachers so we do... Is Displayed
End of Block: Which year group taught

Start of Block: Respondent details

Q41
Please provide the following information about you and your school:
Your first name:
_____

Q43 Your surname:
_____

Q45 Your email address:
_____

Q47 The name of your school:
_____

Q49 The town, city or area in which your school is located:
_____

Q51
Your school's URN (unique reference number - a six digit number starting with '1')
Please leave blank if not known
_____

Q53 The information provided above will be used only for the purposes of this evaluation and will not be passed to anyone outside of the AlphaPlus and Manchester Metropolitan University research team. The data will be handled and stored securely and in accordance with the Data Protection Act and the General Data Protection Regulation (GDPR). Individuals and their schools will not be identified in any reports or other outputs from this evaluation. Teacher email address is used for merging purposes only, you will not be sent any communication directly to this address, all Eedi evaluation surveys are circulated via your school's Eedi lead.

End of Block: Respondent details

Start of Block: Year 11
Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q5 About your Year 11 maths teaching

These questions ask for an estimate of time spent in hours and minutes in your most recent full working week. “Full working week” means your last working week covering Monday to Sunday that was not shortened by illness, religious breaks or public holidays.

It may be useful to review your calendar alongside completing the survey.

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q6 Maths teaching contact time in the last full week (Year 11)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q7 How long did you spend on timetabled Year 11 maths teaching?
Please only count timetabled Year 11 classroom teaching time. Time spent on preparation, marking, etc. will be recorded later in the survey.

Please record a 0 (zero) if you spent no time on this

	Hours	Minutes
Time spent on timetabled Y11 maths teaching (1)	▼ 0 (1 ... 40 (41)	▼ 0 (1 ... 55 (12)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q8 Maths homework workload in the last full week (Year 11)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q9 How long did you spend on the following Year 11 maths homework activities in your most recent full working week?

Please record a 0 (zero) if you spent no time on a listed activity

Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Preparing Y11 maths homework (1)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Setting Y11 maths homework (explaining what the students need to do) (2)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Marking Y11 maths homework (3)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Recording, chasing and analysing Y11 maths homework data (4)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Giving verbal (i.e. spoken) feedback to Y11 students based on their maths homework (5)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q10 Other maths activities in the last full week (Year 11)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q11 How long did you spend on the following Year 11 maths activities in your most recent full working week?

Please record a 0 (zero) if you spent no time on a listed activity

Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Planning Y11 maths lessons (1)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Communication with parents and carers regarding Y11 maths performance (2)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)
Writing reports on Y11 students' maths performance (3)	▼ 0 (1 ... 50 (51)	▼ 0 (1 ... 55 (12)

End of Block: Year 11

Start of Block: Intervention School Qs

Q48 Your use of Eedi

Q70 Did you use Eedi in the last academic year (2018-19) with Year 10?
Yes (1)
No (2)
Not applicable / prefer not to say (3)

Display This Question:
If Did you use Eedi in the last academic year (2018-19) with Year 10? = Yes

Q71 Did you attend any refresher training?
Yes (1)
No (2)

Display This Question:
If Did you use Eedi in the last academic year (2018-19) with Year 10? = No

Q74 Did you attend the Eedi training session held at your school?
Yes, an Eedi led session (1)
Yes, a session led by a teacher in my school who attended an Eedi session (2)
No (3)
Don't know / can't remember (4)

Display This Question:
If Did you attend the Eedi training session held at your school? = Yes, an Eedi led session
Or Did you attend the Eedi training session held at your school? = Yes, a session led by a teacher in my school who attended an Eedi session
Or Did you attend any refresher training? = Yes

Q75 To what extent do you agree or disagree with the following statements about the training session?

	Strongly agree (8)	Agree (9)	Disagree (10)	Strongly disagree (11)	Don't know / NA (12)
Overall, the training session was useful (1)					
The training session was pitched at the right level for me (2)					
I could have set-up and started using Eedi without an in-person training session (i.e. with online or telephone instructions and technical support where needed) (3)					

Display This Question:
If Did you attend the Eedi training session held at your school? = Yes, an Eedi led session
Or Did you attend the Eedi training session held at your school? = Yes, a session led by a teacher in my school who attended an Eedi session

Q76 Please use the space below to comment on any of the responses you have given above or to add and further thoughts on Eedi training:

_____
_____
_____
_____
_____

Q53 Overall, would you say that you are making full use of the platform (for example, by setting the specified number of quizzes, by using the feedback mechanisms, etc.)?
I am making full use of the platform (1)
I am making partial use of the platform (2)
I am not using the platform (3)
Unsure (4)

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q63 How often have you used Eedi to set Year 11 maths homework since the beginning of this academic year (September 2019)?
Every time I set homework (1)
Most of the time (6)
Sometimes (7)
Rarely (8)
Never (9)

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q77 What factors support your use of Eedi?

_____
_____
_____
_____
_____

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q78 What factors hinder your use of Eedi?

_____
_____
_____
_____
_____

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q64 Have you changed the way in which you use the Eedi platform since the beginning of the autumn term?
Yes (1)
No (2)
Don't know (3)

Display This Question:
If Have you changed the way in which you use the Eedi platform since the beginning of the autumn term? = Yes

Q65 Please briefly describe how you have changed the way you use the platform, and if possible, the reasons for making the change(s):

_____
_____
_____
_____

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q47 Please indicate whether you have used / enabled the following functions on Eedi:

	Yes (1)	No (2)	Unsure (4)
Have you connected your scheme of work to Eedi? (1)			
Are you using the Eedi platform to send your students a multiple-choice quiz at the end of a topic? (2)			
Have you set follow-up questions for students based on student performance in the multiple choice quiz? (3)			
Are you monitoring the student data provided by Eedi? (4)			

Have you enabled the parental update function? (5)			

End of Block: Intervention School Qs

Start of Block: Online platforms

Q29 Use of other online maths homework platforms

Q30 Do you currently use an online maths homework platform, other than Eedi, with Year 11 students?
Yes (1)
No (2)

Display This Question:
If Do you currently use an online maths homework platform, other than Eedi, with Year 11 students? = Yes

Q32 Which platform(s) do you use?

(Please indicate how often you use any that apply)

	Once a week or more often (1)	Several times a term (2)	Occasionally (3)	Rarely (4)	Not at all (5)
Complete Maths (1)					
Hegartymaths (3)					
Mathletics (4)					
MathsWatch (5)					
MyMaths (6)					
Other, please specify: (7)					

Display This Question:
If Do you currently use an online maths homework platform, other than Eedi, with Year 11 students? = Yes

Q57 Please indicate whether the following functions are available / have been used on the other (non-Eedi) online platform(s) you use for Y11 maths homework:

	Yes (1)	No (2)	Unsure (4)
Have you connected your scheme of work to it? (1)			
Does it send your students a multiple-choice quiz at the end of a topic? (2)			
Does it send your students a multiple-choice quiz three weeks following the end of a topic? (3)			
Have you set follow-up questions for students based on student performance in the multiple choice quiz? (4)			
Does it help you identify student misconceptions? (5)			
Does it send you alerts on student completion? (6)			
Does it send parents updates? (7)			

End of Block: Online platforms

Start of Block: Is Eedi delivering
Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q66 To what extent are your Year 11 maths students engaging with the Eedi platform?
_____
_____
_____
_____
_____

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q79 Among the maths groups you teach, are there any Year 11 maths students not using Eedi?
Yes (1)
No (2)
Not sure (3)
NA / prefer not to say (4)

Display This Question:
If Among the maths groups you teach, are there any Year 11 maths students not using Eedi? = Yes

Q80 If the students who do not use Eedi have any common characteristics please note them below:
_____
_____
_____
_____
_____

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q58 Does Eedi support you in identifying student misconceptions in their maths homework?
Yes (1)
No (2)
Don't know (3)

Display This Question:
If Does Eedi support you in identifying student misconceptions in their maths homework? = Yes

Q59 If yes, how does Eedi do this?
_____
_____
_____
_____
_____

Display This Question:
If Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making full use of the platform
Or Overall, would you say that you are making full use of the platform (for example, by setting the... = I am making partial use of the platform

Q61 Since starting to use the Eedi platform, have you noticed any changes in the following areas of your maths teaching (for the current Year 11 cohort)?

	Yes, a major positive change (things have got a lot better) (1)	Yes, a minor positive change (things have got slightly better) (7)	No change (8)	Yes, a minor negative change (things have got slightly worse) (9)	Yes, a major negative change (things have got a lot worse) (10)	Don't know / can't say (11)
Year 11 maths homework completion rate (1)						
Year 11 students' understanding of common misconceptions in maths (7)						
Year 11 students' general levels of engagement with maths (8)						
Year 11 students' levels of attainment in maths (over and above what you might have expected from a Y11 cohort at this stage in the year) (9)						
Your confidence in addressing misconceptions in maths with Y11 students (10)						
Parental awareness / engagement with their child's maths learning (11)						

End of Block: Is Eedi delivering

Start of Block: About you
Q36 About you
Q37 For how many years have you..?
(Please indicate to the nearest year)

Been a teacher (1)	▼ Less than one year (1) ... More than 30 years (32)
Worked in your current school (2)	▼ Less than one year (1) ... More than 30 years (32)
Been in your current role (3)	▼ Less than one year (1) ... More than 30 years (32)

Q38 Which one of these best describes your main role at your current school?
Classroom teacher (1)
Head of Department (2)
Head of Year (3)
Deputy or Assistant Head (4)
Headteacher / Acting Headteacher (5)
Other (please specify) (6) _____

Q39 Are you a Newly Qualified Teacher (NQT)?
Yes (1)
No (2)

Q40 Would you describe yourself as a maths specialist teacher?

Yes (1)
No (2)

Q41 Are you contracted to work?
Full time (1)
Part time (2)

Q99 Are you..?
Female (1)
Male (2)
Prefer not to say (4)

End of Block: About you

Survey 4- Control
Eedi Control 4th teacher survey March 2020

Start of Block: Default Question Block

Q1 Thank you for taking the time to complete this survey, your contribution is extremely valuable. This survey is confidential and is being collected for evaluation purposes only. It will not be shared beyond the evaluation team. Neither you nor your school will be identified in reports produced in relation to this study.
By completing the survey you consent to your data being used for the evaluation. You can withdraw at any point by contacting Kathy Seymour at AlphaPlus (**kathy.seymour@alphaplus.co.uk**).
Some of the questions were also included in the March 2019 survey, this is because we are looking at change over time.

Q2 During the current academic year, which of the following year groups do you regularly teach maths to?
Please tick all that apply

Year 7
Year 8
Year 9
Year 10
Year 11
None of the above

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... != Year 11

Q42 Thank you for taking part, the survey applies to Year 11 maths teachers so we do not need to ask you any further questions.

Skip To: End of Survey If Thank you for taking part, the survey applies to Year 11 maths teachers so we do not need to ask... Is Displayed

Q40 Please provide the following information about you and your school:
Your first name:

_____

Q41 Your surname:
_____

Q42 Your email address:

_____
Q43 The name of your school:
_____
Q44 The town, city or area in which your school is located:
_____
Q45 Your school's URN (unique reference number - a six digit number starting with '1')
Please leave blank if not known
_____

Q46 The information provided above will be used only for the purposes of this evaluation and will not be passed to anyone outside of the AlphaPlus and Manchester Metropolitan University research team. The data will be handled and stored securely and in accordance with the Data Protection Act and the General Data Protection Regulation (GDPR). Individuals and their schools will not be identified in any reports or other outputs from this evaluation. Teacher email address is used for merging purposes only, you will not be sent any communication directly to this address, all Eedi evaluation surveys are circulated via your schools Eedi lead.

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q3 How many Year 11 maths sets do you teach? (groups of students not number of lessons)
▼ 1 ... 10

End of Block: Default Question Block

Start of Block: Year 11
Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q5 About your Year 11 maths teaching

These questions ask for an estimate of time spent in hours and minutes in your most recent full working week. “Full working week” means your last working week covering Monday to Sunday that was not shortened by illness, religious breaks or public holidays.

It may be useful to review your calendar alongside completing the survey.

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q6 Maths teaching contact time in the last full week (Year 11)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q7 How long did you spend on timetabled Year 11 maths teaching?
Please only count timetabled Year 11 classroom teaching time. Time spent on preparation, marking, etc. will be recorded later in the survey.

Please record a 0 (zero) if you spent no time on this

	Hours	Minutes
Time spent on timetabled Y11 maths teaching	▼ 0 ... 40	▼ 0 ... 55

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q8 Maths homework workload in the last full week (Year 11)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q9 How long did you spend on the following Year 11 maths homework activities in your most recent full working week?

Please record a 0 (zero) if you spent no time on a listed activity

Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Preparing Y11 maths homework	▼ 0 ... 50	▼ 0 ... 55
Setting Y11 maths homework (explaining what the students need to do)	▼ 0 ... 50	▼ 0 ... 55
Marking Y11 maths homework	▼ 0 ... 50	▼ 0 ... 55
Recording, chasing and analysing Y11 maths homework data	▼ 0 ... 50	▼ 0 ... 55
Giving verbal (i.e. spoken) feedback to Y11 students based on their maths homework	▼ 0 ... 50	▼ 0 ... 55

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q10 Other maths activities in the last full week (Year 11)

Display This Question:
If During the current academic year, which of the following year groups do you regularly teach maths... = Year 11

Q11 How long did you spend on the following Year 11 maths activities in your most recent full working week?

Please record a 0 (zero) if you spent no time on a listed activity

Please include tasks that took place during weekends, evenings or other out-of-school hours as well as in the classroom

	Hours	Mins
Planning Y11 maths lessons	▼ 0 ... 50	▼ 0 ... 55
Communication with parents and carers regarding Y11 maths performance	▼ 0 ... 50	▼ 0 ... 55
Writing reports on Y11 students' maths performance	▼ 0 ... 50	▼ 0 ... 55

End of Block: Year 11

Start of Block: Online platforms

Q29 Use of other online maths homework platforms

Q30 Do you currently use an online maths homework platform with Year 11 students?
Yes
No

Display This Question:
If Do you currently use an online maths homework platform with Year 11 students? = Yes

Q32 Which platform(s) do you use?
(Please tick how often you use any that apply)

	Once a week or more often	Several times a term	Occasionally	Rarely	Not at all
Complete Maths					
Hegartymaths					
Mathletics					
MathsWatch					
MyMaths					
Other, please specify:					

Display This Question:
If Do you currently use an online maths homework platform with Year 11 students? = Yes

Q57 Please indicate whether the following functions are available / have been used on the online platform(s) you use for Y11 maths homework:

	Yes	No	Unsure
Have you connected your scheme of work to it?			
Does it send your students a multiple-choice quiz at the end of a topic?			
Does it send your students a multiple-choice quiz three weeks following the end of a topic?			
Have you set follow-up questions for students based on student			

performance in the multiple choice quiz?			
Does it help you identify student misconceptions?			
Does it send you alerts on student completion?			
Does it send parents updates?			

End of Block: Online platforms

Start of Block: About you

Q36 About you

Q37 For how many years have you..?
(Please indicate to the nearest year)

Been a teacher	▼ Less than one year ... More than 30 years
Worked in your current school	▼ Less than one year ... More than 30 years
Been in your current role	▼ Less than one year ... More than 30 years

Q38 Which one of these best describes your main role at your current school?
Classroom teacher
Head of Department
Head of Year
Deputy or Assistant Head
Headteacher / Acting Headteacher
Other (please specify) _____

Q39 Are you a Newly Qualified Teacher (NQT)?
Yes
No

Q40 Would you describe yourself as a maths specialist teacher?
Yes
No

Q41 Are you contracted to work?
Full time
Part time

Q99 Are you..?
Female
Male
Prefer not to say

End of Block: About you

Appendix 9: SPSS syntax used to perform randomisation

```
* Encoding: UTF-8.
*Title 'EEF DQ RCT syntax - batch 1 - 120 schools.sps'.
*School-level randomisation May 2018 (batch 1).
*The SPSS code below sorts cases into random order within regions and allocates the
first half of each region to group 1 (intervention) and the second to group 2
(control).

DATASET ACTIVATE DataSet1.
SORT CASES BY urn(A).

*Stratified randomisation.
SET RNG=MT MTINDEX=210684.
compute rand2=rv.uniform(0,1000).
sort cases by region rand2.
compute allocation=$casenum.

*Allocate the cases.
recode allocation (1 thru 4, 10 thru 15, 22 thru 27, 36 thru 42, 51 thru 54, 59 thru
62, 67 thru 73, 82 thru 87=1) into group.
recode allocation (5 thru 8, 16 thru 21, 28 thru 33, 43 thru 49, 55 thru 58, 63 thru
66, 74 thru 80, 88 thru 93=2) into group.

*Additional step for if there are an odd number of odd numbers within strata - run the
following additional randomisation.
*Allocate the odd cases.
SET RNG=MT MTINDEX=31048.
compute rand3=rv.uniform(0,1000).
sort cases by rand3.
temp.
select if any(allocation, 9, 34, 35, 50, 81, 94).
*run in one go up to here.

*then run this.
list vars=allocation/format=numbered.
*Creating the line of code below (line 30) is a manual step based on the output of the
list vars command above (line 29).  Essentially the first half of the odd cases will
get allocated to group 1, and the second half to group 2.
*They will be randomly ordered by rand3.
recode allocation (35, 50, 34=1) (94, 81, 9=2) into group.

ADD VALUE LABELS Group 1 'Intervention' 2 'Control'.

freq group.
cross examboard region by group/cells=count col.

SORT CASES  BY group.
SPLIT FILE LAYERED BY group.
DESCRIPTIVES VARIABLES=upncount percentmale percenteverfsm
  /STATISTICS=MEAN STDDEV RANGE MIN MAX.
SPLIT FILE OFF.

DATASET ACTIVATE DataSet1.
T-TEST GROUPS=group(1 2)
  /MISSING=ANALYSIS
  /VARIABLES=upncount percentmale percenteverfsm
  /CRITERIA=CI(.95).
```

Appendix 10: Case study visit materials

School information sheet

AlphaPlus

Education Endowment Foundation Eedi trial evaluation

School information sheet

The Eedi trial

Eedi (previously known as Diagnostic Questions) is an online formative assessment programme that allows teachers to set quizzes for students and provides teachers with feedback about pupils' misconceptions.

Your school is taking part in an Education Endowment Foundation trial using Eedi with Year 10 maths students and the trial is being evaluated by AlphaPlus. Full details are available here.

One component of the evaluation is a case study visit.

Case study aim

The purpose of the visit is to find out about how your school's user experience of the Eedi platform. We are particularly keen to hear what the pupils think of the Eedi platform.

We are evaluating the Eedi platform, not the teachers or learners using it.

What will the school be asked to do?

Ideally, I would visit the school for up to two hours to carry out one or more of the following activities:

- A 30-minute discussion with around eight Year 10 maths pupils who are taking part
- A 20-minute discussion with yourself
- A 30-minute discussion with a Year 10 maths teacher who is taking part.

The evaluation team is happy to work whatever the school can accommodate or feels is appropriate, given your use of the Eedi platform.

What are the next steps?

If you would like to take part in one or more of the activities please let me know.

- I will provide pupil/parent and teacher information sheets (depending on the activity you choose)
- Please select a group of Year 10 maths students and or teachers who can take part
- Please distribute the teacher and pupil information sheets (parental information sheets are also available) that will be provided by AlphaPlus
- Please let me know your preferred date and time slot.

What will happen to the information your school provides?

The discussions will be recorded and transcribed. This data will be transferred from the audio recorder to a secure server at the first opportunity. The naming convention we use will not reveal the name of the school.

At no point will Eedi or the Education Endowment Foundation be able to access the original data; it will be held solely by AlphaPlus.

The AlphaPlus privacy policy can be found here.

How will it be used and to whom will it be reported?

The transcripts will be analysed for themes. The themes identified will be written into a summary report. No school or learner will be identified in the report. The report will be provided to the Education Endowment Foundation.

Hayley Limmer is an ONS Accredited Researcher and has been trained to ensure she does not present data in a disclosive manner.

Data retention and sharing

Case study recordings and transcripts will be destroyed at the end of the trial.

A school can withdraw their data at any time.

Contact details for further information or questions

I hope you will agree to take part in this activity, which is hugely important to the evaluation.

If you have any questions or would like further information, please contact Dr Hayley Limmer at:

Hayley.limmer@alphaplus.co.uk

Teacher information sheet

AlphaPlus

Education Endowment Foundation Eedi trial evaluation

Year 10 maths teacher information sheet

The Eedi trial

AlphaPlus have been commissioned by the Education Endowment Foundation to independently evaluate the trial of the Eedi platform with Year 10 maths students. Full details are available here.

One component of the evaluation is a case study visit.

Case study aim

As a teacher taking part in the Education Endowment Foundation trial of the Eedi platform, we are keen to hear how you are experiencing using Eedi.

This information will inform the evaluation of the Eedi platform.

What will you be asked to do?

You will be asked to take part in a 30-minute discussion on your experience of using the Eedi platform. The discussion will cover the initial set-up and training, your usage and your views on any impact you feel it may be having on yourself or your pupils.

What will happen to the information your school provides?

The discussion will be recorded and transcribed. This data will be transferred from the audio recorder to a secure server at the first opportunity. The naming convention we use will not reveal the school name.

At no point will Eedi or the Education Endowment Foundation be able to access the original data; it will be held solely by AlphaPlus.

The AlphaPlus privacy policy can be found here.

How will it be used and to whom will it be reported?

The transcript will be analysed for themes. The themes identified will be written into a report that summarises the findings. No school or learner will be identified in the report. The report will be provided to the Education Endowment Foundation.

Hayley Limmer is an ONS Accredited Researcher and has been trained to ensure she does not present data in a disclosive manner.

Data retention and sharing

Case study recordings and transcripts will be destroyed at the end of the trial.

You can withdraw from the evaluation at any time.

Contact details for further information or questions

I hope you will agree to take part in this activity, which is hugely important to the evaluation.

AlphaPlus

If you have any questions or would like further information, please contact Dr Hayley Limmer at:

Hayley.limmer@alphaplus.co.uk

Student information sheet

AlphaPlus

Education Endowment Foundation Eedi trial evaluation

Student information sheet

The Eedi trial

Your school is taking part in an Education Endowment Foundation trial using the Eedi maths homework platform.

The trial is being evaluated by AlphaPlus.

Case study aim

As a student using the Eedi maths platform, we are keen to hear what you think of it.

What will you be asked to do?

Take part in a 30-minute group discussion on your experience of using the Eedi platform.

There are no right or wrong answers.

We are evaluating the Eedi platform, not the teachers or learners using it.

What will happen to the information you provide?

With your permission the discussion will be recorded. The recording will not be shared with your school.

The AlphaPlus privacy policy can be found here.

How will it be used and to whom will it be reported?

The discussion will be analysed for themes. Along with the findings from other schools, the information you provide will be written into a report.

Neither you nor your school will be identified in the report.

The report will be provided to the Education Endowment Foundation.

Data retention and sharing

You can withdraw from the discussion at any time for any reason.

The questions are not sensitive, and you can choose not to respond to any question.

Your data will be destroyed at the end of the trial.

Participation is completely voluntary and if you do not want to take part please tell your teacher.

Contact details for further information or questions

If you have any questions or would like further information, please contact Dr Hayley Limmer at:
Hayley.limmer@alphaplus.co.uk

Parent information sheet

AlphaPlus

Education Endowment Foundation Eedi trial evaluation

Parent information sheet

The Eedi trial

Your child's school is taking part in an Education Endowment Foundation trial using Eedi maths homework platform. Full details are available here.

The trial is being evaluated by AlphaPlus.

Case study aim

As your child is using the Eedi maths platform, we are keen to hear what they think of it.

What will your child be asked to do?

They will be asked to take part in a 30-minute group discussion on their experience of using the Eedi platform.

There are no right or wrong answers.

We are evaluating the Eedi platform not the teachers or learners using it.

What will happen to the information your child provides?

With your child's permission the discussion will be recorded. The recording will not be shared with your child's school.

The AlphaPlus privacy policy can be found here.

How will it be used and to whom will it be reported?

The discussion will be analysed for themes. Along with the findings from other schools, this information will be written into a report.

Neither your child nor their school will be identified in the report.

The report will be provided to the Education Endowment Foundation.

Data retention and sharing

Your child can withdraw from the discussion at any time for any reason.

The questions are not sensitive, and they can choose not to respond to any question.

Their data will be destroyed at the end of the trial.

Participation is completely voluntary and if you do not want your child to take part please tell their teacher.

Contact details for further information or questions

If you have any questions or would like further information, please contact Dr Hayley Limmer at:
Hayley.limmer@alphaplus.co.uk

Student focus group schedule

Introductions

Hi welcome, Please can I ask you to sign in and write yourselves a name tag

Thank you for taking the time to speak to me. I am here today to ask about your experiences of using the Eedi maths homework platform. It should last about half an hour.

I am a researcher at A+. We I been commissioned by EEF to independently evaluate the Eedi trial. It is a big trial over 150 schools are taking part.

House 'rules'

- Neither you nor your teacher are being evaluated. I am simply trying to build a picture of how this the programme is working in the real world
- There are no right or wrong answers and I won't share what you say with your school.
- If you don't want to answer any questions feel free to say pass.
- I would ask you to keep what each other says private and not repeat it outside this session.
- Neither you nor your school will be identified in any reporting.

Opportunity to ask any questions

- Before we begin do you have any questions?

Please can I record this so I can focus on what you say rather than writing it down?

- AP: Set recorder running and say this is case study number X- don't say the school name

Main Questions (student) What do others think? Is that the same for everyone?

Usage:

- How regularly do you use Eedi? (Do some of you not use it? Show of hands)
- What was it like to start with?
- Overall impressions:

What sort of Eedi exercises do you use? *Can you tell me about how you use it?*

- Multiple choice quiz
- Free text box to explain your reasoning

- Follow up quiz

What do you like or dislike about the platform? (*Log-in details work?*)

Is your school using the feature that updates your parents or guardians?

How have you found that aspect?

Helpful? Downsides?

If the group has not engaged with Eedi try and establish why they are not engaged

Not given the opportunity?

Don't want to use it?

Do you use any other maths platforms? How do they stack up?

Impact:

Has using Eedi changed how you feel about or approach maths?

Can you tell me a little bit more about that?

Do you think Eedi has impacted on your understanding of mathematical concepts?

Can you provide an example?

Has the parental feature had an impact (if not elaborated on earlier)

Wrap up:

Would you recommend using Eedi to one of your friends?

I think we have covered everything on my list, is there anything you would like to add?

Thank you again for contributing to the evaluation.

Year 10 Maths teacher interview focus group schedule

Remember these Year 10 teachers may have already completed a survey

Introductions

Thank you for taking the time to speak to me.

I am a senior researcher at A+. We have been commissioned by EEF to independently evaluate the Eedi trial.

I am independent from both EEF and Eedi and neither know which schools I am visiting for the case studies.

The overall results will be written-up but no individual or school will be identified in the report.

The school is not being evaluated. I am simply trying to build up a picture of how this the programme pans out real world. We expect these to differ between and within schools.

It would be great hear about your experience of using the programme.

Please can I record this conversation, just so I can focus on what you say rather than writing it down?

AP: Set recorder running and say ‘This is recording X for case study number X’- don’t say the school name

Main Questions (teacher)

Eedi Set up:

To begin, when did you start using the Eedi platform with your Year 10 maths students?

How did you find the Eedi training? (was it provided by Eedi or someone within your school)

How was the initial set-up of the system? Connecting with your scheme of work?

Day to day use:

How have you found using the Eedi platform so far?

How often do you use it?

Multiple choice quizzes?

Parental engagement feature?

Have you adjusted how you use it?

Can you tell me more about the adjustments you have made?

Impact:

How has using Eedi changed your teaching practice, if at all?

Has it changed your ability to identify common maths misconceptions with your Year 10s? Can you please elaborate?

Has it changed your Year 10 maths workload? + & -?

Individual and class level insight?

How, if at all, has using the platform impacted on Y10 maths students?

What can you tell me about their attitudes since using Eedi?

Have you any thoughts on their behaviour?

Would you say you have noticed a change in performance?

Please could you give me an example

Overall- if not covered already:

What works well for you?

Are there any bits you would change?

How does Eedi fit with other platforms you are using?

Wrap up:

I think we have covered everything on my list, is there anything you would like to add?

Thank you again for contributing to the evaluation.

Eedi lead interview focus group schedule

Introductions

Thank you for taking the time to speak to me.

I am a senior researcher at A+. We have been commissioned by EEF to independently evaluate the Eedi trial.

I am independent from both EEF and Eedi and neither know which schools I am visiting for the case studies.

The overall results will be written-up but no individual or school will be identified in the report.

The school is not being evaluated. I am simply trying to build a picture of how this the programme pans out real world.

It would be great to get an overarching senior view of the programme as implemented in your school.

Please can I record this chat so I can focus on what you say rather than writing it down?

AP: Set recorder running and say 'This is recording X for case study number X'- don't say the school name

Main Questions (Eedi lead)

Eedi Set up:

When did the school start using Eedi for Year 10 maths?

How did you find the training?

Was it sufficient for roll out to teachers, students, parents

Were there any costs to the school in terms of implementation?

Financial

Time – (how many hours did you dedicate to start-up?)

Day to day use:

How is your Maths department getting on with Eedi for Year 10?

How often is it used?

Have you noticed any variation between Year 10 maths teachers?

What factors have helped or hindered delivery?

Barriers

Enablers

Tech vs content of the platform

Does the school use any other platforms?

Perceived impact:

How has Eedi impacted on the Year 10 maths teachers in the department, if at all? *What sorts of things have you noticed?*

How has your team found their workload using Eedi?

How, if at all, has using the platform impacted on Y10 maths students?

What can you tell me about their attitudes since using Eedi?

Have you any thoughts on their behaviour?

Would you say you have noticed a change in performance?

Please could you give me an example

Wrap up:

How does your experience of Eedi marry up to what you expected when you signed up to the trial?

I think we have covered everything on my list, is there anything you would like to add?

Thank you again for contributing to the evaluation.