Department for Education

Adult numeracy randomised controlled trials: Preparation for Maths GCSE

Cluster pilot RCT and implementation and process evaluation

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Executive summary

This report presents findings from a pilot randomised controlled trial (RCT) of a Preparation for Maths GCSE course delivered in adult education settings, as part of the Multiply adult numeracy programme. The impact evaluation measured: learners' GCSE Maths grades (primary outcome), pass rates, course completion and confidence in maths. It compared outcomes for intervention recipients with those of a control group who received 'business-as-usual' (BAU) i.e. adult maths GCSE courses that did not have the embedded study skills intervention. The implementation and process evaluation (IPE) explored how the course was delivered in practice and the experiences of adult education organisations and learners who participated in the trial. It aimed to capture learning about conducting RCTs in the adult education sector.

Key findings

The pilot trial found no statistically significant impact on learner academic outcomes. After accounting for baseline characteristics and imbalances, learners who received the Preparation for Maths GCSE course achieved a marginally higher average grade than the control group, with an adjusted impact of +0.19 grade points[1] ($p = 0.475$[2]). While this difference was not statistically significant at the 95% confidence level[3], the findings should be interpreted carefully. As a pilot trial with 25 providers and 1,021 learners, the study was only powered to detect large improvements. The intervention may have produced small to moderate benefits that the pilot trial could not identify, rather than having no effect at all.

The Preparation for Maths GCSE course was delivered with high fidelity, meaning tutors closely followed the intended design and delivered all required content as planned, and was found to be feasible for delivery within adult education settings. Tutors effectively adapted session length and timing to work within existing GCSE Maths curriculum and teaching hours. All treatment group tutors attended the mandatory 2-hour online training, which was considered accessible and sufficient.

Tutors and learners were positive about the content of the course. Treatment tutors observed learners taking greater ownership of their learning, including buying

[1] The GCSE grading system in England uses a numerical scale from 9 to 1. A grade 9 is described as outstanding, 8 as excellent, 7 as very good, 6 as good, 5 as a strong pass, 4 as a standard pass, and 3 to 1 as below pass.
[2] P-values indicate the likelihood that observed differences occurred by chance. The smaller the p-value, the stronger the evidence that the intervention made a real difference. Values below 0.05 are considered statistically significant (i.e. unlikely to have occurred by chance).
[3] When a difference is 'statistically significant at the 95% confidence level', researchers can be 95% certain the difference is real and not just due to chance. The 95% confidence level is widely accepted as the standard threshold for determining statistical significance in research and evaluation.

calculators and practising exam papers independently, which they attributed to the study skills sessions.

Control providers were found to be delivering study skills content as part of their business-as-usual (BAU) teaching, though this was typically less structured than the intervention. Almost all control learners reported attending at least 1 study skills session, with calculator use, exam techniques and revision commonly covered.

Useful learnings from the IPE emerged regarding trial design in adult education settings. Almost half of control learners were unaware they were taking part in a trial, suggesting a need for more effective engagement and communication. Learner interviews conducted some weeks after sessions were delivered sometimes resulted in poor recall, suggesting that future trials should build in data collection closer to delivery.

The pilot trial demonstrated that RCTs can successfully be delivered within adult education settings where interventions can be implemented alongside BAU teaching.

Background and rationale

The Adult Numeracy Trials were funded through the government's Multiply programme, which ran from April 2022 to March 2025 and provided free numeracy courses for adult learners across England. Funding for the research element was in place until March 2026. The trials aimed to generate robust, high-quality evidence on the impact of specific interventions designed to engage, motivate and teach essential maths skills to adults, and to understand the feasibility, opportunities and challenges of implementing trials within the adult education sector. The aim was to address evidence gaps and support broader efforts to ensure value for money in adult education. The trials were innovative and experimental and some of the first of their kind within the adult education sector.

The Preparation for Maths GCSE pilot trial aimed to assess the effectiveness of teaching dedicated study and revision skills content to GCSE adult maths learners. The product developer[4] conducted a review of existing 'Preparation for Maths GCSE' courses and found that they generally focussed on mathematical content and were most often bridging courses between Functional Skills and GCSE. There was some evidence to suggest that teaching cognitive and meta-cognitive skills can help school aged learners, including to address learning difficulties in maths[5]. The primary objective of the pilot trial was to gather evidence on the effectiveness of a study skills

[4] Mathematics in Education and Industry (MEI)
[5] e.g. Behzadi et al., 2014; Schneider & Artelt, 2010; Nolting, 1994

intervention for improving outcomes of adult learners. A secondary objective was to generate learning on delivering RCTs in adult education settings.

Intervention

The Preparation for Maths GCSE course involved delivery of 7 lessons of 1 hour each to adult learners on GCSE Maths courses. The lessons took place within existing GCSE curriculum hours and covered theories of resilience and growth mindset, study skills, revision and exam skills that were tailored to the GCSE maths course specifically. The control was BAU adult maths GCSE courses that did not have the embedded study skills intervention. Treatment and control learners were adults (aged 19+) who had signed up to a GCSE Maths course with an adult education provider in England during the 2024/25 academic year.

Methodology and process

The **primary research question** was:

What was the difference in **average GCSE Maths course grade**, as measured on a scale of 0 to 9, of adult learners in learning providers who received study skills lessons as part of their GCSE Maths course, in comparison to adult learners who did not receive study skills lessons as part of their GCSE Maths course?

Secondary research questions extended this analysis to explore impacts on course completion and the likelihood of achieving a passing grade (grade 4 or above. Additionally, the impact evaluation assessed changes in learners' self-reported confidence in mathematics.

Academic outcomes (grades, pass rates, completion) were collected from the Individualised Learner Record (ILR)[6], whereas confidence data was collected via baseline and endline surveys administered by Ipsos.

The impact evaluation assessed the causal effect of embedding study skills lessons into adult GCSE Maths courses on the outcomes of interest, exploring whether learners who were explicitly taught study and revision skills relevant to maths and were prepared for the additional work that comes with a maths GCSE were more likely to have better outcomes than those who did not have this preparation.

[6] The ILR is an ongoing collection of data about learners from training providers in the Further Education (FE) and Skills sector in England.

The impact evaluation used a 2-arm, pilot cluster-randomised controlled trial (RCT). The trial was initially designed to detect small – medium effects (MDES 0.28). However, higher than anticipated attrition rates and a larger cluster effect than estimated meant the achieved MDES was 0.43, which is suitable for detecting medium – large effect sizes[7]. Adult education providers were randomly assigned to 1 of 2 groups: treatment or control.

A total of 25 providers were included in the final analysis, incorporating 305 learners in the treatment group and 716 learners in the control group. The pilot trial was conducted between May 2023 and March 2026, with intervention delivery taking place during the 2024/25 academic year.

The IPE aimed to understand how the intervention and BAU content was delivered in practice and to explore learners, tutors and providers' experiences of taking part in a trial. It also aimed to capture learning about the feasibility of delivering trials in the adult education sector. Of the 262 adult learning providers in England who deliver GCSE Maths courses, 25 participated in the pilot trial. The IPE drew on qualitative interviews with stakeholders, tutors and learners, lesson observations, and baseline and endline surveys of learners. A detailed IPE framework informed data collection instruments to explore experiences of intervention delivery and learning about conducting RCTs in the adult education sector.

Following the trial feasibility assessment in June 2023, the first trial protocol was registered in April 2024, with the second version registered in September 2024. Recruitment took place between May and September 2024, with randomisation occurring between July and August 2024. The intervention was delivered from October 2024 to June 2025, with baseline surveys conducted in September and October 2024. IPE fieldwork took place from November 2024 to September 2025, and endline surveys ran from May to July 2025. ILR outcome analysis took place between December 2025 and March 2026.

Impact findings

Primary outcome

The intervention did not have a statistically significant effect on the primary outcome of GCSE Maths grade. Unadjusted analysis showed a negligible difference between

[7] The Intracluster Correlation Coefficient (ICC) increased from 0.06 in the protocol to 0.13 in the final analysis. The ICC measures how similar participants are within the same cluster – In this trial, it indicates how similar learners were within individual providers. An ICC greater than 0.10 indicates strong cluster effects, meaning our final ICC of 0.13 exceeded this threshold.

groups (2.81 grade points for treatment relative to 2.79 for control, p = 0.949)[8]. After adjusting for learner characteristics (age, sex, employment status, local deprivation, class size and prior attainment), the estimated impact increased to +0.19 grade points in favour of the treatment group (p = 0.475), though this remains statistically non-significant.

These results should be interpreted with caution given that this pilot trial was underpowered to detect small-to-moderate effects, primarily due to the small number of providers taking part. Therefore, whilst no statistically significant impact was found, the wide confidence intervals mean it cannot be definitively concluded that the intervention had no effect – rather, any potential impact was too small to detect.

Secondary outcomes

The intervention did not have a statistically significant effect on any of the 3 secondary outcomes. Learners who received the study skills lessons had a marginally higher completion rate (87% for the treatment group relative to 84% for the control group, p = 0.603), but this difference was not statistically significant. The Level 2 pass rate (achieving grade 4 or above) was lower for the treatment group (34%) compared to the control group (38%), though again this was not significant (p = 0.782). Similarly, the pilot trial found negligible differences in maths confidence between groups, with slightly higher confidence among treatment participants. However, this finding was severely limited by poor survey completion – while 21% of learners completed the baseline and 42% completed the endline, only 9% completed both. As with the primary outcome, the pilot trial was underpowered to detect the expected effect sizes for these secondary outcomes.[9]

Implementation and process findings

Providers, tutors and learners participating in the pilot trial reported generally positive experiences. Providers expressed confidence in delivering the intervention and were able to meet the data requirements associated with the trial, despite some initial challenges faced by some in getting data into the correct format. Tutors in the treatment group found that the course fitted well within their existing teaching commitments and curriculum delivery. Of those learners who were aware they were participating in a trial, 85% were satisfied with their overall experience and 80% said they would be happy to take part in future research trials. Treatment group learners

[8] The p-value is the probability that a result occurred by chance. A small p-value (usually 0.05 or less) suggests the result is 'statistically significant', meaning it is unlikely to have occurred by chance.
[9] An effect size needed to detect impact in an adult education intervention would be between 0.05 and 0.20 standard deviations, as detailed in Torgerson, C. J., Porthouse, J., & Brooks, G. (2005). A systematic review of controlled trials evaluating interventions in adult literacy and numeracy. Journal of Research in Reading, 28(1), 87–107. https://doi.org/10.1111/j.1467-9817.2005.00256.x

demonstrated high levels of engagement (between 82-92%) with the intervention sessions.

For tutors in the treatment group, the intervention was well-received. The structured guidance and prepared materials required minimal additional preparation by tutors and helped formalise teaching of the topics covered. The tutor training was considered accessible and non-burdensome, delivered through a 2-hour online webinar that could fit around existing teaching commitments. The growth mindset session was reported to be particularly valuable, providing learners with opportunities to reframe negative experiences with maths and build confidence. Treatment group learners demonstrated good engagement across all sessions, with 88-94% finding the content useful and relevant to their learning needs.

Compliance with data requirements was high, with all participating providers submitting learner data, though most were delayed in doing this. The pilot trial experienced moderate attrition, with 14 providers withdrawing after contracting: 7 withdrew before randomisation due to lack of interest or capacity, and 7 after randomisation (an attrition rate of 22% post-randomisation), primarily citing insufficient tutor or learner numbers.

The intervention demonstrated high fidelity[10], with sessions delivered as intended in terms of volume and timing, though tutors did adapt content length and combined materials to fit within the existing curriculum and timetable. The pilot trial found the intervention to be feasible, with both tutors and learners reporting that the study skills sessions felt like a natural part of their GCSE Maths course rather than an additional burden.

Conclusions and recommendations

Policy implications and recommendations

The pilot trial demonstrated that embedding study skills within adult GCSE Maths courses is feasible and welcomed by the adult education sector. The tutor training was accessible and sufficient in enabling tutors to confidently deliver the intervention. The study skills sessions were designed to fit within existing teaching schedules and the GCSE Maths curriculum, making them manageable for tutors to deliver.

Control group providers were already delivering some study skills content as BAU, though this was less structured than the Preparation for Maths GCSE course. Policymakers could consider whether establishing minimum standards for study

[10] Fidelity refers to the extent to which an intervention was implemented as intended, according to the guidance provided by Product Developers.

skills provision within GCSE Maths courses could deliver similar benefits without requiring targeted interventions. The strong demand from control group providers for course materials demonstrates sector-wide interest in these types of resources.

Limitations, successes and lessons learnt

The main limitation of the pilot trial was that it was only powered to detect large differences in the outcomes of interest. It is therefore possible that the Preparation for Maths GCSE course had a modest or small impact that this study was unable to detect.

The timing of data collection presented challenges. Conducting learner interviews and surveys weeks after sessions had been delivered sometimes led to poor recall. Future trials should aim to capture learner experiences closer to delivery. Future studies would also benefit from collecting tutor reflections in real time, perhaps through an online diary tool. Such a tool was featured in the protocol for the current trial, but it was introduced too late for tutors to take it up as delivery was already underway.

Nearly half of control learners were unaware they were participating in a trial, potentially due to having minimal contact following initial sign-up. Future trials could consider different methods of communication to support engagement with IPE research, such as mid-point check-ins with control learners to remind them that they are part of a research trial.

Findings in the wider context of previous research

Previous research suggested that explicitly teaching study skills to school-aged learners improved academic outcomes. This pilot trial did not find evidence of this in adult education settings, but this could be due to the small sample size. It could also be due to the control group of adult learners being taught study skills as part of BAU delivery, although not in a standardised way.

Future research

The number of adult education providers is small compared to the number of providers in other phases of education, including the number of schools in compulsory (or pre-16) education. This creates challenges for achieving statistical power in trials, necessitating particularly strong sector engagement.

To run a study large enough to detect meaningful effects would have required 90% of all eligible providers across England to participate, which would not have been feasible. While different randomisation levels could have been considered (by area,

tutor or class instead of by provider), each approach presented important limitations. Area-level randomisation would only be effective if location strongly influenced learner outcomes. Tutor or class-level randomisation within the same providers would not meaningfully improve the trial design or statistical power, as providers have limited tutors and classes and there would be a risk of treatment and control groups contaminating each other through shared materials or teaching methods. Individual learner randomisation would require fewer providers but would create practical difficulties and risk compromising the validity of the study.

Future research could consider a longitudinal component to track whether improved study skills translate into subsequent education or employment outcomes, which would provide crucial evidence of longer-term impact.

This pilot trial was part of a programme of trials on adult numeracy commissioned by the DfE. Alongside the individual trial reports, DfE has published a programme report on findings related to running RCTs in the adult learning sector, describing the broader learnings for the sector (Mackay et al., 2026).

1. Introduction

This report sets out the findings from an impact evaluation and implementation and process evaluation (IPE) of a new intervention, Preparation for Maths GCSE, delivered in adult education settings. The intervention aimed to improve adult learners' attainment in Maths GCSE and boost their confidence in maths. The evaluation was part of a 2-armed, pilot randomised controlled trial (RCT). The trial involved 25 adult education providers and a total of 1,021 learners, with 305 learners taking part in Preparation for Maths GCSE courses (the 'treatment group') and 716 engaging in 'Business as Usual' (BAU; the 'control group'). BAU consisted of standard adult GCSE Maths courses without the embedded study skills sessions. While individual tutors in control providers may have covered similar topics informally, these activities were neither coordinated nor standardised.

1.1 Background and rationale

1.1.1 Background of Multiply

The Adult Numeracy Trials were funded through the government's Multiply programme, which ran from April 2022 to March 2025 and provided free numeracy courses for adult learners across England. Funding for the research element was in place until March 2026. The trials aimed to generate robust, high-quality evidence on the impact of specific interventions designed to engage, motivate and teach essential maths skills to adults, and to understand the feasibility, opportunities and challenges of implementing trials within the adult education sector. The aim was to address evidence gaps and support broader efforts to ensure value for money in adult education. The trials were innovative and experimental and some of the first of their kind within the adult education sector. Details on the other trials conducted can be found at Adult numeracy randomised controlled trials. The overall performance of the Multiply programme was subject to a separate evaluation.

As with all RCTs, the interventions were tested to see what difference they made to adult learner outcomes, through identifying, in a statistically robust way, those which show measurable impact when compared to a randomised control group.

In doing so, the trials aimed not only to establish what works for adult numeracy learning, but also to generate valuable learning about how RCTs can be effectively designed and delivered in this diverse sector.

1.1.2 Existing evidence

Despite a statutory entitlement to free English and maths up to Level 2, participation and achievement in adult maths courses has been low and declined in the decade prior to Multiply (DfE data). This trial sought to contribute evidence on particular barriers faced by adult learners. Existing evidence suggests tutors perceive adult learners' study and revision skills to be weak. Farrow (2019) found that in 3 UK colleges, all staff who were asked felt that lack of study skills was an issue for their learners. Over half stated that this was a significant or major issue. Mathematics in Education and Industry (MEI)[11] explored this further with their own research, asking 25 tutors working in different settings whether they felt their adult learners were prepared for the demands of Level 2 study. Of these, 16 described their students as 'not well prepared' or 'very unprepared'.

MEI also conducted a review of existing Preparation for Maths GCSE courses and found that they generally focussed on mathematical content and were most often bridging courses between Functional Skills and GCSE. The review did not find any examples of study skills courses specifically designed for GCSE adult maths learners. General study courses were identified, but the content was less relevant to maths e.g. students were taught essay writing skills. However, the review highlighted some evidence that teaching cognitive and meta-cognitive skills can help school aged learners, including to address learning difficulties in maths[12]. Furthermore, the Education Endowment Foundation's (EEF) research into metacognition and self-regulation indicates that "explicitly teaching strategies to help plan, monitor and evaluate specific aspects of their learning can be effective" in school-aged learners with an impact of an additional 7 months' progress over the course of a year (EEF, 2021). The Preparation for Maths GCSE course draws on two growth mindset theories: Dweck's theory[13] and Lee and Johnston-Wilder's growth zone model[14]. Although a 2023 systematic review and meta-analysis into growth mindset interventions found no evidence of impact on academic achievement, these approaches may still encourage a more positive attitude to learning[15].

1.1.3 Rationale

Despite evidence of improved outcomes from school-aged children, this has not yet been robustly tested among adult learners. This pilot trial sought to test the

[11] An educational charity committed to improving maths education through resources, guidance and inspiration for teachers and students in a range of settings.
[12] Behzadi et al., 2014; Schneider & Artelt, 2010; Nolting, 1994
[13] Dweck, C.S. (2006). Mindset: The new psychology of success. New York: Random House.
[14] Lee, C. and Johnston-Wilder, S. (2018). Getting Into and Staying in the Growth Zone. [online] NRICH. University of Cambridge. Available at: https://nrich.maths.org/articles/getting-and-staying-growth-zone
[15] Do growth mindset interventions impact students' academic achievement? A systematic review and meta-analysis with recommendations for best practices. (apa.org)

effectiveness and feasibility of a novel intervention aimed at adult learners preparing for GCSE Maths qualifications, 'Preparation for Maths GCSE'.

1.2 Intervention description: theory of change

The Preparation for Maths GCSE intervention was designed to improve adult learners' readiness for GCSE Maths by building their confidence, resilience, study habits and revision strategies.

Financial resource (input) facilitated activities relating to learner and tutor recruitment, and tutor training. Following training and set-up, tutors delivered 7 one-hour lessons covering theories of resilience and growth mindset, study skills, revision and exam skills (output) within existing GCSE curriculum hours.

The Theory of Change envisaged that these lessons would enable learners to develop their understanding of growth mindset principles, effective study planning, and revision strategies (change mechanism). As they built these skills, they would gain practical techniques that support resilience and sustained engagement in their learning (short-term outcomes). Over time, this would lead to increased confidence in maths, completion of courses and achievement in GCSE Maths courses (medium-term outcomes).

Ultimately, it was hoped that strengthened skills, greater confidence and higher rates of completion and achievement in GCSE Maths courses would contribute to key impacts:

- Improved functional skills across England's adult population; and
- More opportunities for further study and career progression; and
- Wider social and economic benefits such as being able to support children's learning and manage personal finances.

This theory of change is summarised in Table 1.

Table 1: Logic model for the Preparation for maths GCSE intervention

Situation	Tutors perceive adult learners' study and revision skills to be limited and that this prevents them from making the most of their courses and revising effectively.	**Aims**	This product has been developed to test the hypothesis that learners who are explicitly taught studying and revision skills (relevant to Maths) and are prepared for the additional work that comes with a Maths GCSE, are more likely to have better outcomes (course completion, achievement) than those who do not have this preparation.

Inputs and activities	Outputs	Change mechanisms	Outcomes	Impacts
Inputs • Financial resource for set-up, training and resources e.g. printing **Activities** • Tutor recruitment • Tutor training • Learner recruitment	• No. tutors recruited • No. training sessions completed • No. learners recruited • 7 one-hour sessions focused on building a growth mindset and resilience are delivered	• Improved knowledge of growth mindset and resilience, study skills, and revision skills (relevant to Maths) amongst learners lead to better outcomes in terms of retention, course completion a nd achievement.	**Short term** • Tutors: Increased awareness of adult learners' background and needs • Learners: Increased knowledge of growth mindset theory and strategies to support resilience • Learners: improved study skills • Learners: improved revision and exam techniques **Medium term** • Improved retention on GCSE maths courses • Improved achievement on GCSE maths courses • Improved learner confidence in maths	• Improved functional numeracy skills across population • Opportunities for further study. • Increased employment opportunities. • Wider social/economic benefits such as ability to support children's learning and manage personal finances

Evidence assessment	The intervention was informed by evidence that explicitly teaching study skills to school-aged students improves outcomes and this pilot trial intended to gather evidence on a similar intervention for adult learners.

Assumptions	• The intervention is delivered as intended: in particular, that tutors refer back to the study skills sessions throughout the year in a consistent way. This may depend on consistency in teaching staff. • Most learners start the course at the beginning. • Learning providers can manage schemes of work to fit the study skills sessions into the existing course hours without reducing the maths content. • Learners can access and use online resources. • Maths qualifications lead to improved labour market outcomes.	**Possible unintended consequences**	• Additional content to cover because the intervention may slightly reduce the time available for teaching maths, compared to business as usual. This reduced time to teach the Maths GCSE curriculum could detrimentally impact coverage and learner attainment. • Treatment learners that opted-out of the trial data collection could not opt-out of intervention delivery, which may have resulted in detrimental impacts for the learner (e.g. confusion).

Source: Pilot Trial protocol

1.3. Intervention Description[16]

Name

Preparation for Maths GCSE.

Why: Rationale, theory and/or goal of essential elements of the intervention

The Preparation for Maths GCSE intervention aimed to provide tailored support for adult learners to improve their study revision skills for the GCSE maths course. This is a seen as a particular challenge for adult learners, yet no such targeted courses for adults were found despite positive evidence among for equivalent skills-building among school-aged children. Specifically, this intervention was designed to improve adult learners' readiness for GCSE maths by building their confidence, resilience, study habits and revision strategies.

See the sections on the intervention background and theory of change for more detail.

Who: Recipients of the intervention

Treatment learners were adults (aged 19+) who had signed up to a GCSE Maths course within an adult education provider in England during the 2024/25 academic year.

What: Physical or informational materials used in the intervention

Materials comprised tutor training resources (including recordings), 7 lesson plans and accompanying PowerPoint slides

To develop the course content, experts and researchers reviewed existing evidence and conducted surveys and focus groups with adult learners. These activities informed lesson plans, resources and guidance for tutors. These products were piloted, refined and assembled into the final product.

[16] This intervention description uses the Education Endowment Foundation (EEF) adapted version of the Template for Intervention Description and Replication (TIDieR). Initially used for health trials, this template is increasingly used in other forms of research for replicability.

What: Procedures, activities and/or processes used in the intervention

The Preparation for Maths GCSE course consisted of 7 lessons of one hour each, although there was some flexibility in the lesson duration so that providers could shorten them to fit in with their usual sessions if they needed to. The lessons covered:

- Session 1: Growth mindset and resilience
- Session 2: An introduction to GCSE Maths
- Session 3: Study skills
- Session 4: Using IT
- Session 5: Using a calculator
- Session 6: Revision techniques
- Session 7: Exam techniques

Who: Intervention providers/implementers

MEI led the development of the intervention. They were sub-contracted by National Numeracy[17] who were appointed as one of the Product Developers for the adult numeracy trials.

A Managed Service Supplier (MSS), Etio, was appointed to lead recruitment of adult education providers and schools to the trials. They were also responsible for contracting, monitoring of delivery and issuing of payments.

GCSE Maths tutors employed by adult education providers and assigned to the treatment group delivered the intervention. Tutors were qualified to teach GCSE Maths and were required to attend a two-hour training session.

How: Mode of delivery

The intervention was delivered in group sessions (ranging from 9 to 14 learners), either face-to-face or online during already scheduled foundation and/or higher-level GCSE Maths classes for adult learners.[18]

Where: Location of the intervention

The Preparation for Maths GCSE sessions were delivered in the settings where recipients were taking their GCSE lessons. These were primarily Further Education (FE) colleges and adult education colleges across England. Delivery also took place online.

[17] An independent charity aimed at improving numeracy skills in the UK
[18] Group size estimate is based on qualitative interviews with treatment tutors.

When and how much: duration and dosage of the intervention

The intervention consisted of 7 lessons, including 5 one-hour sessions in the Autumn term, followed by 2 one-hour sessions in the Spring term. These were delivered between September 2024 and April 2025. The specific schedule depended on existing GCSE Maths course delivery, meaning this may have been at weekends or in evenings.

The first 5 lessons were intended to be delivered to adults on GCSE Maths courses at the start of the academic year. The last 2 sessions were intended to be delivered directly before the Easter break. However, in England, there is a 42-day learner probationary period at the start of the academic year in adult education. The first 5 lessons were therefore delivered after this 42-day period (but still within the autumn term) to ensure that all learners in the treatment group had equal opportunity to receive the same dosage.

Tailoring: Adaption of the intervention

The extent of tailoring was within boundaries set by the intervention developer (MEI): all course content was expected to be delivered, with tailoring kept to a minimum, although lesson materials could be adapted to suit learner needs and delivery timings.

Modifications: Changes to the planned intervention

There were no modifications to the planned intervention.

Strategies to maximise effective implementation

Fidelity was assessed through the IPE, using the quantitative surveys and qualitative evidence from tutor and learner interviews.

Evidence of implementation variability

The intervention was delivered with good fidelity – tutors delivered the 7 sessions and used the flexibility encouraged in the training to adapt timings and merge content to suit their learners. Refer to the IPE results section for more information.

1.4. Evaluation overview

This pilot randomised controlled trial (RCT) gathered evidence on the quality, relevance, suitability, and effectiveness of the content of the Preparation for Maths GCSE course and the processes involved with implementing it, as well as any adaptations that might be required to support future delivery or wider roll out. Feeley and colleagues (2009)

proposed that feasibility studies (in this case, a pilot study) gauge both the capability to effectively deliver the intervention and to carry out the evaluation design.

The focus of the impact evaluation was on testing whether the intervention achieved its intended outcomes. As part of a pilot RCT, the intervention was compared to BAU, whereby individuals received adult Maths GCSE courses that did not have the embedded study skills intervention. For the IPE evaluation, evidence was gathered on the processes involved in delivery of the intervention including quality, relevance and suitability, as well as the experiences of adult education organisations and adult learners in participating in a pilot RCT.

DfE commissioned Ipsos UK to deliver the evaluation.

1.5. Research questions

1.5.1. Impact evaluation

The impact evaluation used an experimental design to assess the causal effect of embedding study skills lessons into adult GCSE Maths courses on the outcomes of interest. The primary research question focused on overall academic attainment, specifically measuring the difference in average GCSE grades (on a scale of 0 to 9). Secondary research questions extended this analysis to explore impacts on course completion and the likelihood of achieving a pass grade (Level 4 or above), both derived from Individualised Learner Record (ILR) records[19]. Additionally, the evaluation assessed changes in learners' self-reported confidence in maths using data collected through baseline and endline surveys.

Primary research questions:

1. What was the difference in **average GCSE Maths course grade**, as measured on a scale of 0 to 9, of adult learners in learning providers who received study skills lessons as part of their GCSE Maths course, in comparison to adult learners who did not receive study skills lessons as part of their GCSE Maths course?

Secondary research questions:

1. What was the average difference in **GCSE Maths course completion**, measured by records of course completion in ILR data, of adult learners in learning providers who received study skills lessons as part of their GCSE Maths course, in comparison to adult learners who did not receive study skills lessons as part of their GCSE Maths course?

[19] The ILR is an ongoing collection of data about learners from training providers in the Further Education (FE) and Skills sector in England.

2. What was the average difference in **GCSE Maths attainment**, measured by pass rates (a pass being level 4 or above of the GCSE grade), of adult learners in learning providers who received study skills lessons as part of their GCSE Maths course, in comparison to adult learners who did not receive study skills lessons as part of their GCSE Maths course?
3. What was the average difference in **changes in confidence in maths**, measured by baseline and endline surveys, of adult learners in learning providers who received study skills lessons as part of their GCSE Maths course, in comparison to adult learners who did not receive study skills lessons as part of their GCSE Maths course?

1.5.2. Implementation and process evaluation

Main IPE research questions[20]:

1. Has the intervention been delivered with fidelity (that is, in line with the intervention guidance)?
2. To what extent, if at all, did the "business as usual" GCSE course typically include any content relating to study skills?
3. Was there any evidence of contamination of the "business as usual" GCSE courses? If so, what were the causes of this?
4. How did tutors experience delivering the intervention?
5. What was tutors' experience of the training and support provided to deliver the intervention?
6. How was delivery of the intervention affected by turnover or absences among teaching staff?
7. What was learners' experience of the intervention?
8. What outcomes did the intervention have for learners?
9. What enablers were there to learner engagement and participation in the intervention?
10. What barriers were there to learner engagement and participation in the intervention, and how could these have been overcome?
11. What level of GCSE exam papers were taught and administered to learners in treatment and control groups (foundation or higher)?
12. What criteria was used by providers in treatment and control groups to determine which learners to put forward for GCSE Maths exams?
13. What lessons were learned for future delivery of the intervention?
14. What lessons have been learned from the pilot about delivering RCTs in adult education settings?

[20] The full set of IPE research questions and corresponding sub-questions are detailed in Annex 4.

1.6 Reading the report

This report outlines the evaluation methodology, findings from both the impact evaluation and IPE and provides conclusions and recommendations. A glossary of technical terms included throughout the report can be found in Annex 1.

Additional information can be found in Annexes 1-10, including intervention details, costs, IPE questions, research tools used and the approach to impact analysis.

2. Methods

This section describes the methods used for the impact and implementation and process evaluations.

2.1. Impact evaluation

2.1.1. Trial overview/design

This study was a 2-armed cluster randomised pilot trial, as described in the Pilot Trial Protocol[21]. Randomisation occurred at the provider level. The trial population consisted of adults (aged 19 or over) enrolled on GCSE maths courses in England.

The primary outcome was GCSE grade (0 to 9), assessed through formal exams at the end of the academic year 2024/25. No baseline data were collected for the primary outcome. Secondary outcomes included Level 2 Pass rates (grade 4+), course completion, and confidence in maths. Confidence in maths was measured through baseline and endline surveys administered by Ipsos. This is summarised in Table 2 below, and the sections that follow provide further detail on the key design features.

Table 2: Overview of trial design

Trial element	Description
Trial name	Adult Numeracy Randomised Controlled Trials: Preparation for Maths GCSE
Project title	Preparation for Maths GCSE study skills sessions embedded into GCSE Maths
Developer	MEI (subcontracted by National Numeracy)
Geography	England
Delivery	Adult learning providers
Evaluator	Ipsos UK
Principal investigators	Karl Ashworth, Rodrigo Torres

[21] The Pilot Trial Protocol can be accessed here: https://osf.io/e5tqn/overview

Trial element	Description
Evaluation plan authors	Catherine Crick, Stella Capuano, Chantal Aberdeen, Akshay Choudhary, Karl Ashworth, Rodrigo Torres, Susan Mackay
Trial design	Cluster randomised trial with two arms: **Treatment arm**: the Preparation for Maths GCSE intervention, embedded into GCSE Maths courses Control arm**:** GCSE Maths courses without the Preparation for Maths GCSE intervention
Trial type	Pilot RCT
Trial population	Adults (19+) on a GCSE Maths course
Primary outcome	GCSE Grade (0-9)
Secondary outcomes	Level 2 Pass (Grade 4+), Course Completion, Confidence in Maths

Source: pilot trial protocol

A pilot 2-arm, cluster RCT was conducted to evaluate the impact of the Preparation for Maths GCSE course on the primary and secondary outcomes. Pilot RCTs are useful in developing an understanding of the feasibility, strengths and challenges of delivering a fully powered trial. However, they typically only have statistical power to detect larger-than-expected effect sizes. The pilot trial was initially designed to detect small – medium effects (MDES 0.28). However, higher than anticipated attrition rates and a larger cluster effect than estimated meant the achieved MDES was 0.43, which is suitable for detecting medium – large effect sizes.

Randomisation took place at the provider level (adult education providers) rather than at the individual learner level. This minimised the risk of contamination where control learners might unintentionally be exposed to the intervention. It also aligned with the practical reality of adult education settings, where providers typically run a single GCSE Maths class rather than multiple parallel classes.

The pilot trial compared the intervention against a BAU control to assess impact on primary and secondary outcomes. BAU consisted of standard adult GCSE Maths courses without the embedded study skills sessions. While individual tutors in control providers may have covered similar topics informally, these activities were neither coordinated nor standardised.

The study measured outcomes across 3 dimensions: academic achievement, retention, and attitudinal shifts. The analysis controlled for pre-existing differences in learners' attainment and confidence. Table 3 presents the trial design characteristics.

Table 3: Trial design characteristics

Trial characteristic	Description
Trial design, including number of arms	2-arm, cluster randomised control pilot trial with individual-level outcomes
Unit of randomisation	Provider (Adult education providers)
Stratification variables	None
Primary outcome: Variable and timing	GCSE Maths course grade by end of academic year (2024/25)
Primary outcome: Measure (instrument, scale, source)	Continuous measure (0-9 scale) derived from ilr_outgrade from the ILR. Standard grades (1-9) converted to numeric values. Non-numeric grades (e.g., 'U', 'X', 'F', 'Fail') and Entry Level outcomes ('EL') recoded to 0. Withdrawals treated as missing data.
Secondary outcome(s): Variable and timing	-GCSE Maths Level 2 pass (Grade 4+) by end of academic year -GCSE Maths course completion by end of academic year -Change in confidence in maths (pre-to-post course)

Trial characteristic	Description
Secondary outcome(s): Measure (instrument, scale, source)	Level 2 Pass: Binary measure indicating if a learner achieved a Grade 4 or higher, derived from ilr_outgrade from the ILR. Course Completion: Binary measure derived from ilr_compstatus from the ILR, where learners recorded as 'Completed' were coded as 1, 'Withdrawn' as 0, 'Continuing' as missing data. Confidence in Maths: Continuous measure derived from learner surveys using a Likert scale ranging from 1-5, where 5 indicates a high level of confidence and 1 the lowest level.
Baseline for primary outcome: Variable and timing	Level of prior attainment at baseline
Baseline for primary outcome: Measure (instrument, scale, source)	Binary measure derived from ILR data, coded as 1 if the learner held a Level 1 qualification, otherwise 0.
Baseline for secondary outcomes: Variable and timing	-Level of prior attainment at baseline -Baseline confidence in maths (for confidence outcome only)
Baseline for secondary outcomes: Measure (instrument, scale source)	-Prior attainment: Binary measure derived from ILR data, coded as 1 if the learner held a Level 1 qualification, otherwise 0. -Baseline confidence: Continuous measure derived from pre-course learner survey using a Likert scale.

Source: Pilot Trial protocol

2.1.2. Recruitment

Adult education providers were recruited to the trial from 238 providers across England that current offer GCSE Maths courses to adult learners. Recruitment was undertaken by a Managed Service Supplier (MSS). Providers received £1,000 as a participation payment plus £7.20 per additional guided learning hour, with the MSS managing all payments.

The intervention used existing enrolment procedures for GCSE Maths courses, which meant there was no need for a separate learner recruitment process. Providers could participate in the trial if they agreed to data sharing requirements, including the submitting data on participating learners to the Ipsos Data Portal.

The study population included adult learners, aged 19 or older at the start of the academic year, who were studying for a 'GCSE (9-1) in Mathematics' qualification. They were drawn from cohorts registered at participating adult education providers during the 2024/25 academic year. Learners were informed about the trial and given the opportunity to opt out of having their data being shared and of being contacted to take part in research activities.

2.1.3. Sample size

During the design phase, it was estimated that a total of 44 providers would need to be recruited to achieve a final target of 30 providers and an MDES of 0.28. This figure allowed for 30% attrition from providers who initially signed up but did not go on to participate. Attrition was expected at various stages of the trial process, including after contracts were signed.

At the point of randomisation, there were 32 providers in the trial, with 305 learners allocated to the treatment group and 716 to the control group[22]. By endline, the number of participating providers had decreased to 25. The control group retained 713 learners at endline, when considering data for the primary outcome, while the treatment group decreased to 272. Annex 7 outlines the number of providers and learners that withdrew from the trial and programme at each stage, and the section on attrition explains the reasons for withdrawal.

Administrative data provided outcomes for the vast majority of trial participants. The trial achieved a final analytical sample of 985 learners for the primary outcome (a 3.5% attrition rate). However, attrition rates differed markedly between the trial arms for the GCSE grade primary outcome: while the control group remained almost intact (0.4%

[22] The unequal distribution between trial arms occurred because the randomisation procedure did not account for class sizes. As a result, providers with larger classes were disproportionately allocated to the control group, though this happened by chance.

attrition), the treatment group experienced 10.8% attrition[23]. By contrast, the survey-based outcome (confidence in maths) experienced severe attrition (58% overall), with both trial arms losing over 55% of participants. This high attrition severely limits the generalisability of the findings on confidence outcomes.

As discussed in the results section, a defining characteristic of this trial was the high level of clustering within providers[24]. This meant that much of the variation in student outcomes was due to differences between providers rather than between individual learners. This high clustering reduced the trial's "effective sample size", making the estimates less precise[25]. Randomisation at the individual level was not feasible because the intervention was delivered to pre-existing class groups rather than to individuals. Clustering at the provider level was therefore necessary, not a methodological choice**.** As a result of this high level of clustering, the minimum detectable impact was approximately 0.88 grade points in the GCSE scale[26] - well above expected values[27]. Effect sizes in adult education interventions typically fall well below this figure[28]. As anticipated, the trial was therefore statistically underpowered to detect small or even moderate improvements in attainment.

Further detail on the parameters observed following recruitment, randomisation and attrition can be found in Annex 8.

2.1.4. Randomisation

Providers were allocated to trial arms using simple randomisation. Tutors knew their allocation because they had to attend specific training for the intervention. However, marking of the primary outcome remained blinded, as external examiners who marked the GCSE exams were unaware of the trial allocation. Similarly, learners did not know which trial arm they were in, and the evaluators only assessed exam results at the analysis stage.

[23] This happened in cases where individuals were recorded in the ILR as having completed the GCSE course, but grade information was missing. The treatment group was disproportionately affected by this.
[24] With an Intracluster Correlation Coefficient (ICC) estimated at 0.13 for the primary outcome in the adjusted model scenario.
[25] Hypothesised ICCs (0.08) were lower than those observed.
[26] The GCSE grading system in England uses a numerical scale from 9 to 1. A grade 9 is described as outstanding, 8 as excellent, 7 as very good, 6 as good, 5 as a strong pass, 4 as a standard pass, and 3 to 1 as below pass.
[27] The Minimum Detectable Effect Size (MDES) for the primary outcome was 0.43 standard deviations (approximately 0.88 grade points), whereas the expected figure according to protocol estimations was 0.28 standard deviations (0.57 grade points).
[28] Often in the range between 0.05 and 0.20 standard deviations. See, for instance, Torgerson, C. J., Porthouse, J., & Brooks, G. (2005). A systematic review of controlled trials evaluating interventions in adult literacy and numeracy. *Journal of Research in Reading*, 28(1), 87–107. https://doi.org/10.1111/j.1467-9817.2005.00256.x

2.1.5. Outcome measures

Academic outcomes (grades, pass rates, course completion) were collected via the ILR, whilst confidence data was collected via baseline and endline surveys of learners.

The primary outcome was the learner's GCSE Maths grade (using the standard 0-9 scale[29]). Standard grades (1-9) were converted to numeric values. Non-numeric grades (e.g., 'U', 'X', 'F', 'Fail') were coded to 0 to indicate failure or non-submission. Entry Level grades ('EL') and withdrawals were also coded as zero for the primary analysis.

The following 3 secondary outcomes were assessed to capture broader impacts:

- Level 2 Pass: Whether learners achieved grade 4 or above in their GCSE Maths (coded as a binary measure).
- Course Completion: Whether learners completed the GCSE Maths course. Derived from ILR data[30] and coded as binary (1 for 'Completed', 0 for 'Withdrawn').
- Confidence in Maths: A continuous measure from learner surveys. Learners rated their confidence on a 1-5 Likert scale, with 5 indicating highest confidence and 1 lowest.

Compliance definition and analysis

The definition of compliance for the impact evaluation was refined during the analysis phase. The trial protocol outlined compliance measures at both tutor and learner level. However, for the impact analysis, learner-level compliance was prioritised[31]. This was because all tutors had complied with the intervention requirements, whereas some learners did not meet the minimum requirements to be considered as 'treated'[32].

Compliance at the learner level was defined as having attended at least 5 of the 7 sessions and not changing providers during the course. This ensured the analysis captured learners who received the intended intervention in a stable environment. The protocol originally specified a simple dosage threshold[33].

All tutors delivering the intervention attended the compulsory training in advance of delivery. For providers who remained in the trial, 100% of lessons were delivered as intended. There were no reported tutor changes during the trial delivery period.

[29] This was extracted from the ILR variable ilr_outgrade.
[30] This was extracted from the ILR variable ilr_compstatus.
[31] Specifically, this means estimating the complier average causal effect (CACE) - the average treatment effect for individuals who complied with their treatment assignment.
[32] Here, 'treated' refers to individuals who both participated in the intervention and met the minimum requirements to be classified as 'compliers'.
[33] Learners randomised to treatment who missed 3 or more of the 7 study sessions would be considered non-compliant.

The impact of the intervention on learners who fully received it was estimated and reported as the 'complier treatment effect'[34]. As noted, learners were classified as 'compliers' if they were in the treatment arm, attended at least 5 sessions, and did not switch providers during the course. Section 4.4.1 provides details on learner attendance, based on data provided by tutors.

2.1.6. Impact analysis

Primary analysis

The difference in mean GCSE Maths grades between treatment and control groups was estimated using linear regression. The estimated impact includes all learners regardless of whether they followed the treatment allocation. This approach is called Intention to Treat (ITT) analysis, which was calculated using the following equation:

$$Y_{ij} = \beta_0 + \beta_i Treat_i + X_{ij} + \varepsilon_{i,j}$$

In this equation, j represents the provider, i represents the individual, β_0 is a constant term. Y_{ij} represents the GCSE Level 2 maths course grade for participant i at provider j. $Treat_i$ is the treatment indicator for participant i. X_{ij} represents various individual characteristics of participant i at provider j, and $\varepsilon_{i,j}$ is the error term for participant i at provider j.

The regression models controlled for key characteristics[35]: age, sex, ethnicity, disability status, employment status, local deprivation, class size[36] and prior attainment[37]. The models also took into account clustering of data within providers[38].

[34] Using an Instrumental Variable (IV) approach. The random allocation of providers served as the instrument for this analysis.

[35] Demographic, socioeconomic and educational variables were constructed from Individualised Learner Record (ILR) fields. Age was calculated from ilr_dateofbirth as of 1 September 2025. Binary indicators were created from: ilr_sex (female=1), ilr_priorlevel (Level 1 qualification=1), ilr_empstat1 (paid employment code 10=1), ilr_ethnicity (White British code 31=1), and ilr_llddhealthprob (disability code 1=1). Neighbourhood deprivation (imd_low_quintile) was derived by linking ILR postcodes to 2025 indices, identifying learners in the most deprived 20% of areas.

[36] Number of learners per class.

[37] Coded as 1 if the learner held a Level 1 qualification, otherwise 0.

[38] Standard errors were clustered at the provider level to account for the trial design.

Secondary analysis

Secondary outcomes (Level 2 pass rate and course completion) were analysed using binary outcome regression models[39] to estimate the impact of the intervention on these outcomes[40]. The following logistic regression was used:

$$(\ P(Y_{ij} = 1)) = \beta_0 + \beta_1 Treat_i + X_{ij}$$

In this equation, j represents the provider and i represents the individual. β_0 is a constant term, whilst Y_{ij} represents GCSE Level 2 maths attainment for participant i at provider j. $Treat_i$ is the treatment indicator for participant i, and X_{ij} represents various individual characteristics of participant i at provider j. $Logit(.)$ is the logit function and $P(Y_{ij} = 1)$ is the probability of the outcome Y_{ij} taking the value of 1.

These models controlled for the same key characteristics: age, sex, ethnicity, disability status, employment status, local deprivation, class size, and prior attainment. Learner confidence was analysed using linear regression[41], which also adjusted for baseline confidence scores. The following linear regression was used:

$$Y_{ijt} = \beta_0 + \beta_i Treat_i + Y_{ij,t-1} + X_{ij} + \varepsilon_{i,j}$$

In this equation, $\boldsymbol{j}$ represents the provider and $\boldsymbol{i}$ represents the individual. $\boldsymbol{\beta_0}$ is a constant term. $\boldsymbol{Y_{ijt}}$ represents the continuous measure of confidence in maths measured at endline for participant $\boldsymbol{i}$ at provider $\boldsymbol{j}$. $\boldsymbol{Y_{ij,t-1}}$ represents the continuous measure of confidence in maths measured at baseline for participant $\boldsymbol{i}$ at provider $\boldsymbol{j}$. $\boldsymbol{Treat_i}$ is the treatment indicator for participant $\boldsymbol{i}$. $\boldsymbol{X_{ij}}$ represents various individual characteristics of participant $\boldsymbol{i}$ at provider $\boldsymbol{j}$, and $\boldsymbol{\varepsilon_{i,j}}$ is the error term for participant $\boldsymbol{i}$ at provider $\boldsymbol{j}$.

Sub-group analyses

The analysis investigated whether the intervention had differential effects on specific groups of learners[42]. This focused on 4 pre-specified characteristics: gender (male vs. female), employment status (employed vs. not employed), prior attainment (Level 1 qualification held vs. not), and age[43]. As expected, given the limited power of the primary outcome analysis, these analyses were also underpowered.

[39] In particular, logistic regressions where the outcome of interest takes the value 1 (i.e. success) or 0 (no success).
[40] In particular Average Marginal Effect (AME) for these outcomes (or the average incremental change in probability of the outcome taking the value 1).
[41] Ordinary Least Squares (OLS).
[42] By including interaction terms in the regression models.
[43] Which was analysed by splitting the sample at the median age of 34 years.

Missing data

To assess the impact of missing data, the analysis included imputed demographic data. First, checks were undertaken on missing data levels and whether dropout rates differed between treatment and control groups. To avoid excluding learner records due to missing background information (such as age or employment status), imputation methods filled these specific gaps[44]. This exercise was only undertaken on missing contextual data and was not applied to missing outcomes. If a learner was missing a GCSE grade, they were excluded from the grade (primary) analysis[45] but included in the separate analysis of course completion.

2.1.7. Limitations

The most critical limitation of this pilot RCT was that it did not have enough statistical power to detect realistic effect sizes. Only 25 providers took part, whilst 144 would have been needed for a fully powered trial. This meant that the study could only detect a minimum effect size (MDES) of 0.43 standard deviations, equivalent to 0.88 GCSE grade points. This threshold is much higher than what educational interventions typically achieve, as effect sizes in adult education trials usually range between 0.05 to 0.20 standard deviations.

The power limitations were made worse by unexpectedly high clustering within providers (ICC of 0.13). This means that much of the variation in student outcomes was due to differences between providers rather than individual learners. This clustering reduced the trial's statistical precision, making it unable to detect small or even moderate improvements that the intervention may have produced.

2.1.8. Variations from protocol

Although the trial mostly followed the original research design, several analytical and practical changes were made during implementation to improve the accuracy of the findings and address practical challenges. These changes included: using more administrative covariates for impact estimation, adding exploratory sub-group analyses, and moving tutor training online to improve accessibility and compliance. The definition of learner compliance was also updated, along with how missing outcome data was handled, to reduce potential bias from different drop-out rates between groups.

[44] Multiple Imputation by Chained Equations (MICE). This generated 20 imputed datasets.
[45] As previously noted, individuals who withdrew from the course and had no recorded GCSE grade were assigned a zero value.

2.2. Implementation and process evaluation

2.2.1. Data collection methods

The IPE activities included qualitative interviews, lesson observations, and baseline and endline surveys of learners. The IPE framework that was developed during trial design informed the development of data collection instruments by setting out which data collection methods would address each of the IPE research questions and sub-questions (see Annex 4). A multi-stage review process, undertaken by Ipsos and DfE, was conducted for the qualitative and quantitative research tools to ensure alignment with the IPE framework.

Qualitative interviews

The topic guides used for the qualitative interviews were developed using a semi-structured format that embedded use of supportive probes to explore IPE research questions and sub-questions. The observation data collection tool was developed using the Activities, Environments, Interactions, Objects and Users (AEIOU) Framework approach[46] and included an additional checklist to assess how closely the lesson was delivered in line with the lesson plan.

Qualitative data was collected in 2 waves. Wave 1 fieldwork took place in February 2025 (when the intervention had been partially delivered to the treatment group) and Wave 2 took place in July 2025 (when the intervention had been fully delivered to the treatment group). Table 4 provides an overview of the qualitative data collection activities across both Wave 1 and Wave 2. In total, 18 tutor interviews (15 treatment, 3 control), 41 learner interviews, and 10 stakeholder interviews were conducted between February and September 2025.

The intended numbers of learners and treatment group tutors were interviewed. However, the number of control group tutors interviewed at Wave 2 fell slightly short of target (3 completed against a target of 5).

[46] This heuristic framework provides an observation technique centred around 5 categories which are used to document contextual inquiries during ethnographic studies.

Table 4: Overview of interviews conducted

Group	Treatment	Control	Not assigned (Stakeholder)	Total
Tutors[47]	15	3	[z]	18
Learners	31	10	[z]	41
Stakeholders[48]	4	4	3	11

Source: Ipsos

Note: [z] refers to 'not applicable'

Lesson observations

A total of 5 in-person lesson observations were conducted in March and April 2025. This included 2 observations of Session 6 (Revision techniques) delivery, 2 of Session 7 (Exam techniques), and 1 combined Session 6 and 7. Researchers who conducted the observations used the data collection tool to take notes for analysis purposes.

Tutor data collection

Tutor data was collected via the Ipsos Data Portal using a pre-designed Excel template. Treatment and control group tutors were asked to share their contact details for interview purposes. Treatment tutors were also asked to record when, by who, and how much of the treatment sessions were delivered to learners. Please see Annex 6: Fields in Ipsos Data Portal for full details of the required fields.

Learner surveys

All learners in the trial (who did not opt out of taking part in data collection) were asked to complete a baseline and endline survey. The survey was multi-modal, with learners having the option to complete the interview either online or via telephone. For the baseline, tutors received a QR code and web link which was shared with learners for completion in class. If the survey was not completed in class, Ipsos followed up via email, text reminders and telephone. The baseline survey was completed between the start of September 2024 and end of January 2025 by Prep for GCSE learners. The response rate was 44% and 12% for treatment and control respectively[49]. The endline survey was

[47] 4 tutors were interviewed at both Wave 1 and Wave 2

[48] The stakeholder interview sample included lead contacts within participating adult education providers, representatives from the Managed Service Supplier, and a representative from the intervention developer.

[49] Response rates usually reflect the number of learners who completed a survey divided by the number of learners who were invited to take part in the survey x 100. As the baseline surveys for Preparation for Maths GCSE were distributed by providers via an open link, we cannot say with certainty the total number of learners who received the invitation. As such, the response rate is an estimate based on dividing the

live between the end of May 2025 and early July 2025. The endline survey was administered via an online link, sent to learners' email addresses collected via the Ipsos Data Portal. 2 email reminders and 2 text message reminders were sent to learners throughout June. Response rates for the endline survey for treatment and control groups were 12% and 34% respectively. Table 5 outlines the number of learners that took part in each survey[50].

Table 5: Learner survey completes

Survey	Treatment	Control	Total
Baseline	135	86	221
Endline	113	331	444

Source: Ipsos surveys

At endline, learners were contacted directly by Ipsos and invited to complete the survey via email, text message and telephone using contact details collected via the Ipsos Data Portal. This was more effective than the approach to baseline survey data collection, which was reliant on tutors sharing the QR code / weblink to learners during class as learner contact details were not yet available.

Learner data collection

Data on all learners participating in the trial was collected from providers via the Ipsos Data Portal between September 2024 and March 2025. This secure portal was set up to enable providers to transfer personal details about their learners to the Ipsos research team. Providers were given a unique username and password to access the secure portal and were asked to populate a pre-designed Excel template. Attendance data was also collected via the portal for learners in the treatment group. Please refer to Annex 6: Fields in Ipsos Data Portal for full details of the fields.

Online tutor diaries (not implemented)

Treatment group tutors were offered the opportunity to take part in an online diary exercise to inform the IPE. This would have involved them recording their experiences following delivery of each treatment session, with the intention of capturing real-time reflections on what worked well, what worked less well and any recommendations for improvement. The information was to be captured using Ipsos AppLife[51].

number of responses by the number of learners who were in the trial at the time of randomisation x100. The true response rate could be higher or lower.

[50] The surveys include partial completes so a learner was counted as taking part in the survey if they completed the first question after the screener questions.

[51] A digital app that can be accessed from any smartphone or tablet.

While participation in the online diaries was optional, they were ultimately not implemented due to limited uptake from tutors. This limited uptake was likely caused by delays in offering the diaries, which meant they did not align with intervention delivery timings. As a result, tutors were asked to participate after sessions had already begun or been completed, reducing the feasibility of capturing real-time reflections. This is discussed further in the IPE findings.

Trial themes

The IPE explored the extent to which delivery of the Preparation for Maths GCSE course adhered to the intervention guidance. Discussion guides with treatment tutors included sections that explored fidelity and compliance, and interviewers had access to the lesson plans and additional resources provided to tutors to assess this. Lesson observations enabled the evaluation team to observe application and adherence to the delivery tools provided to treatment tutors. Feasibility, readiness for trial and learner progress were evaluated as part of the IPE, outlined in the IPE results.

Additional research, separate to the pilot trial, was conducted with providers that had expressed an interest in taking part in the Adult Numeracy research trials but subsequently withdrew. In-depth interviews with providers and a short survey were conducted, contacting providers that had expressed an interest and/or registered with an adult numeracy trial (including the Preparation for Maths GCSE trial). Findings are reported in the attrition section of the IPE findings chapter of this report.

Bias mitigation

A series of steps were taken to minimise bias during data collection for the IPE. For qualitative interviewing, 1 tutor was contacted from each organisation at random to ensure a spread across different organisations. For the learner interviews, quotas were set for:

- group type (treatment or control),
- employment status, gender,
- English as a first language and,
- for treatment level of attendance.

Bias was also reduced through interviewing participants with a range of perspectives, including those that did not deliver the intervention itself (for example, those allocated to the control group and wider stakeholders). Wave 1 data collection also reduced reliance on retrospective perspectives, designed to capture ongoing and potentially shifting experiences throughout the academic year. However, the option to capture real-time tutor reflections on delivery immediately after session delivery (via Ipsos' AppLife online diary tool) was deemed infeasible due to low uptake and delayed timelines for set-up.

Moreover, the core research team at Ipsos practised reflexivity and group-based analysis throughout the IPE[52]. The core research team consisted of 3 researchers, with additional support from 5 experienced interviewers. This broad representation within the team allowed for multi-stage review processes, and ensured data collection and analysis were conducted and discussed to promote granular and higher-level reflections.

2.2.2. Analysis

The research team took an iterative approach to IPE analysis that consisted of 5 main stages.

1) For qualitative data, data management and initial framework analysis were conducted on each participant interview separately. Each interview was analysed individually, identifying patterns and themes that aligned with the relevant IPE research questions, using a framework approach.[53] The analysis framework was developed from the IPE research questions and discussion guides.
2) For quantitative data, survey responses were matched to ILR and learner data collected via the Ipsos Data Portal. All differences between treatment and control group survey responses were tested at the 95% confidence level, with the text explicitly noting whether differences were statistically significant or not.

   Survey weights were not applied for several methodological reasons. Firstly, the experimental design with random assignment provided the primary framework for causal inference for the primary and secondary outcomes measures, with randomisation addressing the selection bias that weights typically correct for. Secondly, balance checks showed that survey respondents were broadly representative of the full trial population, despite some demographic differences[54]. Finally, because this was a pilot study with a small number of participants, making statistical adjustments to the data could have made the results less reliable without making them noticeably more accurate. The survey results presented in the IPE findings should therefore be considered indicative rather than definitive.
3) Group analysis sessions were held with all qualitative interviewers and core team members to provide a space for discussing emerging themes from the

[52] Reflexivity in qualitative research promotes transparency through ongoing examination and critique of researchers' biases, assumptions and other factors that may influence data collection, analysis and interpretation of findings.
[53] A systematic method that involves summarising and charting data into a matrix, allowing for thematic comparison across different cases in line with the research objectives.
[54] Statistical comparisons (t-tests and proportion tests) were conducted to examine whether survey respondents differed from the full trial population on key demographic characteristics: age, gender, ethnicity and disability. Whilst most characteristics showed reasonable balance, the tests identified statistically significant differences for disability at baseline and for age and ethnicity at endline.

qualitative interviews. These sessions were conducted at multiple timepoints throughout the qualitative data collection period, allowing the team to refine their understanding as new data emerged.

4) A storyboard analysis session was held with the core research team to identify the themes, based on the triangulation of qualitative and quantitative evidence. This discussion was structured based on the IPE research questions and formed the basis of the report's main IPE research findings.
5) The IPE analysis explored the extent to which the Theory of Change for the intervention accurately reflected delivery. It assessed the extent to which intended activities and outputs were delivered and whether short term outcomes had been achieved, such as improved learner study skills. The IPE also assessed the extent to which the key assumptions underpinning the Theory of Change were met.

The IPE findings section addresses the IPE research questions set out in the protocol for the trial and the extent to which the findings support the Theory of Change (outlined in the introduction). It examines several elements of trial implementation, including: compliance, attrition, fidelity, feasibility, readiness for trial and learner progress.

The findings were intended to contribute to understanding the trial's implementation, highlighting successes, challenges, and areas for improvement for future research and wider rollout of the intervention.

2.2.3. Limitations

The IPE methodology and its findings had some limitations due to a reduced qualitative sample and time delays between delivery and data collection. Without online diaries, tutors' experiences could not be captured as they happened. This was compounded by the timing of qualitative fieldwork, which meant there was little direct contact with tutors until late in the delivery period. Only 3 control tutors took part in interviews, rather than the target of 5. Some participants also found it hard to recall details about the intervention and GCSE Maths course delivery because data collection happened after teaching had ended. This was especially difficult for learner interviews, which took place up to three months after the course had finished.

Other limitations affected the robustness of the findings. Lesson observations only happened in the treatment group, which prevented comparisons of teaching practices between trial arms. Survey response rates were low – only 21% completing the baseline and 42% completing the endline. More importantly, just 9% of learners completed both surveys, which severely limited the ability to track individual changes in confidence over time. Changing how surveys were distributed from tutor-distributed at baseline to direct contact by Ipsos at endline may have introduced measurement bias. Attendance and

fidelity data relied entirely on tutor self-reporting through the Ipsos Data Portal with no independent checks, which could have led to over-reporting of compliance. Finally, learners who agreed to be interviewed may have been more motivated than other learners.

The IPE survey data was subject to non-response, with differential response patterns potentially introducing some bias into the exploratory findings. However, statistical comparisons revealed that survey respondents were broadly representative of the full trial population across available socio-demographic characteristics, despite some differences in disability at baseline and age and ethnicity at endline. Given this broad representativeness and the experimental design of the trial, the decision not to apply weights (as outlined in the methodological approach) was appropriate. However, the IPE survey findings should be considered indicative rather than definitive, providing valuable insights whilst acknowledging potential bias from unobserved characteristics.

2.2.4. Variations from protocol

The IPE methodology mostly followed the protocol, apart from fewer interviews with control tutors than planned. Proposed changes by the evaluator after protocol development, to incorporate online diaries with tutors, did not progress. This was due to low tutor uptake and delays offering the diaries, which meant they did not align with intervention delivery.

2. Impact evaluation results

2.1. Summary of results

The final analytical sample for the pilot trial consisted of 1,021 learners across 25 adult education providers, with 716 learners allocated to the control group and 305 to the treatment group. The pilot trial was statistically underpowered to detect small-to-moderate effects, primarily due to the limited number of participating providers and high "clustering" in the outcomes of interest. This clustering meant that learners within the same provider tended to achieve similar outcomes, regardless of whether they were in the treatment or control group.

Learner characteristics were similar across groups for age, gender, and disability, but differed significantly for employment and ethnicity. The treatment group was less likely to be employed (30% vs 47%) and included fewer White British learners (22% vs 40%) than the control group. These imbalances were accounted for in all adjusted models to ensure a more accurate estimate of the intervention's impact.

The evaluation found no statistically significant impacts across primary or secondary outcomes:

- GCSE grades (Primary Outcome): The unadjusted impact estimate was 0.02 grade points, increasing to +0.19 points when controlling for covariates; neither result was statistically significant.
- Pass rates: The treatment group showed a non-significant decrease in Level 2 pass rates of 4.2 percentage points.
- Course completion: There was a non-significant increase in course completion of 2.9 percentage points.
- Confidence: Maths confidence showed a negligible increase of 0.03 points on a 1-5 scale, which was not statistically significant[55].
- Sub-group analysis: The intervention showed no differential for specific groups. Interaction tests for sex, employment, prior attainment, and age were all non-significant.

The effect size among "compliant" learners (those attending at least 5 sessions) increased to 0.32 grade points but remained statistically non-significant after adjusting for covariates.

Due to large standard errors and wide confidence intervals, these null results should not be interpreted as evidence of no effect. Rather, any potential impact (positive or

[55] In this case estimates adjusted for baseline scores are reported for a sample of 88 individuals.

negative) was too small to be distinguished from statistical noise in this underpowered pilot study.

The additional data tables contain more detail on survey responses.

2.2. Pilot trial statistical power considerations

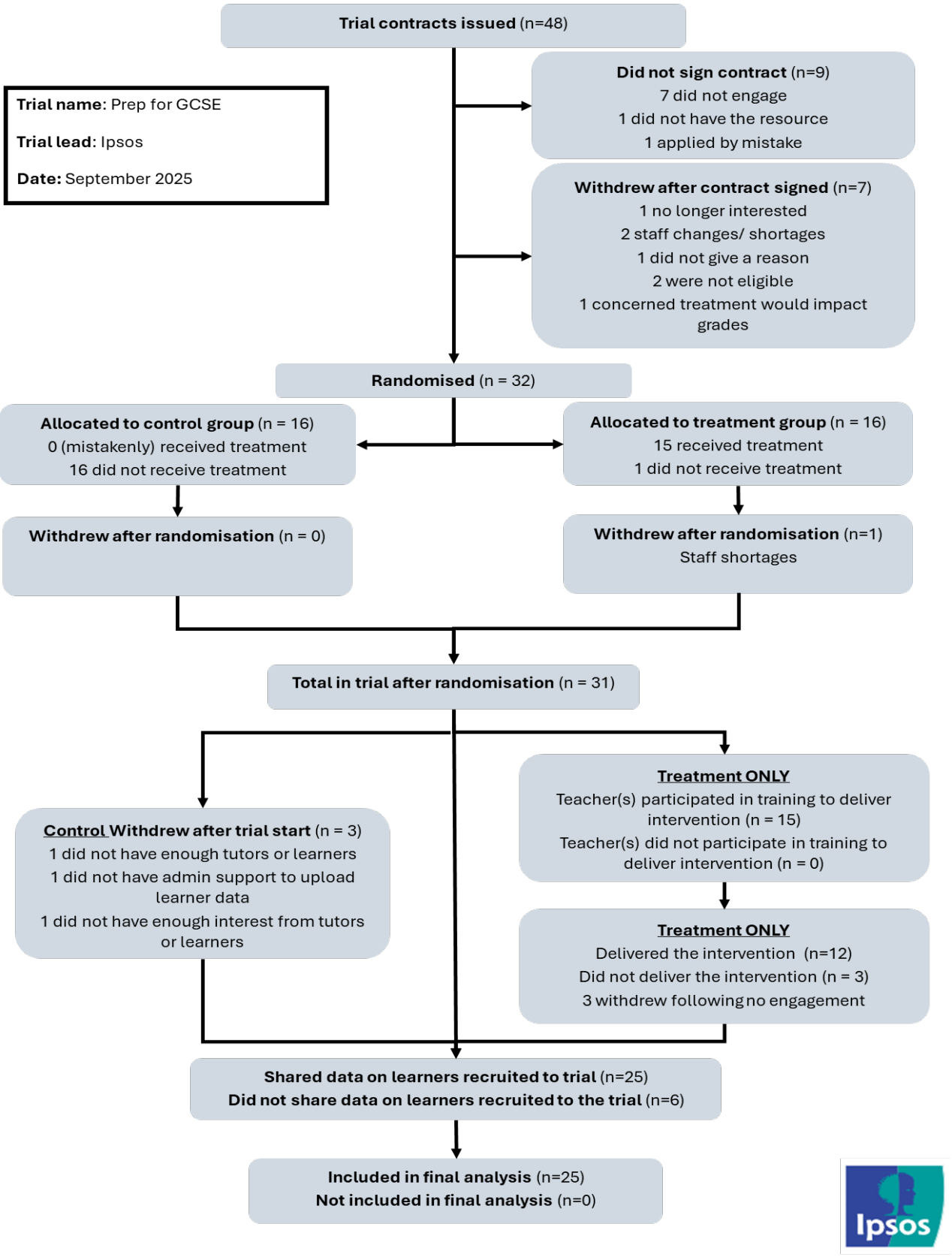
As previously mentioned, post-hoc power analysis indicates that the pilot trial was underpowered to detect small-to-moderate effects, primarily due to the high level of clustering (Intracluster Correlation) observed within providers and the limited number of providers for impact estimation. Annex 9: Data clustering summarises the clustering levels observed in the data at analysis stage for all outcomes.

2.3. Sample size

The final analytical sample included 1,021 learners, with 716 allocated to the control group (13 clusters) and 305 to the treatment group (12 clusters), shown in Table 6. Provider attrition is detailed in the CONSORT diagram in Figure 1[56].

[56] CONSORT (Consolidated Standards of Reporting Trials) is an internationally recognised framework for reporting randomised controlled trials. The CONSORT flow diagram shows the progress of all participants through the trial, including enrolment, allocation, intervention, and analysis stages.

Figure 1: Provider attrition map



Data completeness varied significantly by source. Administrative data had minimal missing values, with only 3.5% of GCSE grades missing from the ILR, whereas the survey-based confidence outcome measure experienced high attrition, as discussed in section 3.6 on missing data.

Table 6: Sample size achieved at baselines

Level	Metric	Control	Treatment	Total
Clusters	Randomised (N)	13	12	**25**
Learners	Baseline Sample (N)	716	305	**1,021**

Source: Combined dataset including information from Ipsos Data Portal and administrative datasets (ILR)

2.4. Baseline balance

The demographic characteristics of learners were analysed at baseline to assess whether randomisation had achieved balance between groups. As shown in Table 6, the treatment and control groups were similar for most learner characteristics. There were no statistically significant differences between the 2 arms for age, gender, ethnicity, disability, or prior attainment. The average age of learners was 33-35 and the majority were female in both groups, typical of adult learning populations[57].

However, significant differences emerged for employment and ethnicity. Learners in the treatment group were 16 percentage points less likely to be employed (31%) than those in the control group (47%). Additionally, the treatment group had a significantly lower proportion of White British learners (22%) compared to the control group (40%). Approximately 1 in 4 learners reported a disability.

To account for these baseline imbalances and improve the precision of the impact estimates, all characteristics listed in Table 7 were included as covariates in the adjusted regression model.

[57] Around 60% of adult education learners in England are female. See Department for Education (2024). *Further education and skills: Academic year 2023/24* [Data set]. Explore Education Statistics. **https://explore-education-statistics.service.gov.uk/find-statistics/further-education-and-skills/2023-24**

Table 7: Baseline balance of key characteristics

Characteristic	Control Group (N=716)	Treatment Group (N=305)	Difference	p-value
Age (Mean, years)	35	33	-2 years	0.643
Female (%)	73%	72%	-2 ppt	0.607
Employed (%)	47%	31%	-16 ppt	0.000
Prior Level 1 (%)	16%	19%	2.4 ppt	0.365
White British (%)	40%	22%	-19 ppt	0.000
Disability (%)	29%	26%	-3.2 ppt	0.311

Source: administrative datasets (ILR)

Notes: p-values derived from cluster-adjusted tests. ppt = percentage points.

2.5. Primary and secondary analysis results

Table 8 summarises the main impact estimation results for the primary and secondary outcomes as well as the minimum detectable effect size for each outcome. Due to being underpowered, no statistically significant impacts were found for any primary or secondary outcome.

Table 8: Summary of estimation results

Outcome	Impact estimate	Effect size	p-value	Standard error (SE)	Achieved MDES[58]
GCSE Grade (Primary)	0.02 points	d = 0.01	0.949	0.30	0.88 points (0.43 SD)
Level 2 Pass Rate	-4.2 ppt	h = -0.09	0.536	6.8 ppt	19.9 ppt
Course Completion	+2.9 ppt	h=0.08	0.423	3.6 ppt	10.5 ppt
Maths Confidence	+0.03 points	d = 0.02	0.892	0.22	0.64 points (0.39 SD)

Source: Ipsos STATA analysis

Notes: d = Cohen's d (for continuous outcomes); h = Cohen's h (for binary outcomes). MDES = Minimum Detectable Effect Size. ppt = percentage points. None of the impact estimates are statistically significant.

The Minimum Detectable Effect Size (MDES) for the primary outcome (GCSE grade) was 0.43 standard deviations (equivalent to 0.88 GCSE grade points). This threshold is far above what educational interventions typically achieve; effect sizes in adult education trials range usually fall between 0.05 and 0.20 SD[59]. Therefore, if the Preparation for Maths GCSE course produced a meaningful but modest benefit (e.g., an improvement of 0.20 grade points), this analysis would have been unable to detect it as statistically significant.

The secondary outcomes faced similar limitations. Based on the observed standard errors, the trial could only detect an increase in pass rates of 19.9 percentage points or an increase in course completion of 10.5 percentage points. These are substantial shifts that short-term interventions rarely achieve.

[58] The Minimum Detectable Effect Size (MDES) is the smallest difference (effect) between a treatment group and control group that a study has enough statistical power to detect as statistically significant.
[59] See, for instance, Torgerson, C. J., Porthouse, J., & Brooks, G. (2005). A systematic review of controlled trials evaluating interventions in adult literacy and numeracy. *Journal of Rese`arch in Reading*, 28(1), 87–107. https://doi.org/10.1111/j.1467-9817.2005.00256.x

Therefore, the null results should not be taken as evidence that the intervention was ineffective. The 95% confidence intervals for the primary outcome (-0.60 to +0.64) and secondary outcomes include positive values. The intervention may have produced a small positive effect that was undetectable due to statistical noise caused by variation between providers.

2.5.1. Sensitivity Analysis

The sensitivity analysis confirms the null findings across both primary and secondary outcomes. As shown in Tables 9 and 10, adjusting for key covariates – age, gender, ethnicity, disability, employment status, local deprivation and prior attainment – did not substantially change the results. These statistically non-significant findings must be interpreted cautiously given the trial's low statistical power. The large standard errors produced wide confidence intervals (e.g., [-0.35, +0.72] for GCSE Grade) that include both meaningful positive and negative values.

Primary outcome: GCSE grade

The unadjusted analysis showed virtually no difference between groups (0.02 grade points, p=0.949). After controlling for key covariates, the estimated treatment effect increased to +0.19 grade points. This remained statistically non-significant (p=0.475), with a small effect size (Cohen's d = 0.09).

Table 9: Primary outcome sensitivity analysis (GCSE Grade)

Model	Coefficient	Std. Error	p-value	95% CI	Effect Size (Cohen's d)
Unadjusted	0.02	0.30	0.949	[-0.60, 0.64]	0.01
Adjusted	0.19	0.26	0.475	[-0.35, 0.72]	0.09

Source: Ipsos STATA analysis

Note: Adjusted for age, gender, ethnicity, disability, employment, local deprivation, and prior attainment. Clustered standard errors. N=905 for adjusted model.

Secondary outcomes

For Level 2 pass rates, after accounting for the key characteristics mentioned above, the treatment group had a 2 percentage point lower pass rate. This finding was not statistically significant (p=0.782). Course completion rates were 1.9 percentage points higher for the treatment group, though this difference was also not statistically significant (p=0.603). Among learners who completed the survey, the adjusted difference in

confidence scores was a negligible 0.03 points on a 1 to 6 scale, again without statistical significance (p=0.892).

Table 10: Secondary outcomes sensitivity analysis

Outcome	Impact estimate	Std. Error	p-value	95% CI	Effect size
Level 2 Pass (AME)	-0.020 (-2 ppt)	0.07	0.782	[-15.8, 11.9]	h=-0.04
Course Completion (AME)	+0.019 (+1.9 ppt)	0.04	0.603	[-0.05, 0.09]	h=0.05
Confidence (Coef.)	0.03	0.22	0.892	[-0.44, 0.50]	d=0.02

Source: Ipsos STATA analysis

Notes: AME = Average Marginal Effect. Coef. = coefficient from OLS regression. ppt = percentage points. Effect size is Cohen's h for binary outcomes and Cohen's d for continuous outcomes. None of the results are statistically significant. Standard errors clustered at the provider level.

2.5.2. Compliance (CACE) analysis

The majority (61%) of learners in the treatment group were compliant (they attended at least 5 sessions and did not switch providers). When Instrumental Variable regression was used to estimate the impact on these compliant learners, the effect size in the adjusted model increased to 0.32 grade points, but remained statistically non-significant (p=0.439), as shown in Table 11. This suggests that even when learners fully engaged with the Preparation for Maths GCSE course, the intervention did not significantly improve their exam results. However, this analysis was also underpowered to draw definitive conclusions.

Table 11: Primary outcome Complier Average Causal Effect (CACE) analysis

Model	Coefficient	Std. Error	p-value	95% Confidence Intervals	Effect size (Cohen's d)
CACE Unadjusted	0.03	0.52	0.948	[-0.98, 1.05]	0.01
CACE Adjusted	+0.32	0.42	0.439	[-0.50, 1.14]	0.16

Source: Ipsos STATA analysis

Notes: CACE estimated using instrumental variable regression. Compliance defined as attending 5+ sessions and not switching providers. Adjusted model includes controls for age, gender, ethnicity, disability, employment, *local deprivation, and prior attainment.*

2.5.3. Sub-group analysis

There was no evidence that the intervention worked differently for specific groups of learners; the interaction tests for gender, employment, prior attainment, and age were all non-significant. This suggests that the impact of the course was consistent for everyone, regardless of their background. However, as for previous results, these findings should be interpreted with caution. Dividing the data into subgroups (e.g., comparing employed vs. unemployed learners) results in smaller sample sizes, which further reduces the statistical power of the analysis. Consequently, even if the intervention did work differently for a specific group, this study may have been too small to detect it. Further detail on the subgroup analysis results can be found in Annex 10: Subgroup analysis.

2.6. Missing data

2.6.1. Data completeness on outcomes

As shown in Table 12, data completeness for the primary academic outcome (GCSE Grade) was excellent, with results available for 96% of the randomised sample. Similarly, course completion data was robust, covering 98% of all learners. On the other hand, missing data were greater for the survey-based outcome (confidence in maths) with data available for 42% of trial participants. This low response rate means that findings relating to learner confidence should be interpreted with caution.

Table 12: Outcome data completeness

Stage / Outcome	Total Sample (N)	Missing (N)	Data Completeness (%)
Baseline (Randomised)	1,021	[z]	100%
Course Completion	997	24	98%
GCSE Grade (Primary)	985	36	96%
Maths Confidence	424	597	42%

Source: Ipsos learner surveys, Provider administrative data and ILR outcome data

Note: [z] refers to ‘not applicable’

2.6.2. Data completeness on learner characteristics

Administrative data on learners' backgrounds were largely complete (see Table 13). Standard administrative data – including age, gender, ethnicity, disability, local deprivation and prior attainment – were available for 89% of the sample, allowing these factors to be controlled for in the analysis, though some uncertainty remains from the missing data. However, data on learners' *prior* levels of confidence were only available for 88 learners who completed both baseline and endline surveys. This data gap meant that analysis of confidence could not be adjusted for baseline scores.

Table 13: Data completeness on learner characteristics

Variable / Group	Total Randomised (N)	Data Available (N)	Completeness (%)	Notes
Standard Administrative data Covariates *(Age, Gender, Ethnicity, Disability, Employment, local deprivation, Prior Attainment)*	1,021	944	89%	Derived from the primary outcome adjusted model, which required all these variables.
Baseline Confidence *(Survey Covariate)*	424	88	21%	Critical Issue: Only 88 of the 424 learners with endline data also had baseline data.

Source: Ipsos learner surveys, Provider administrative data and ILR outcome data

While overall data completeness for administrative covariates was high, Table 14 shows the specific pattern of missing data across trial arms, demonstrating that missingness was generally balanced between control and treatment groups. Age, sex, ethnicity, and local deprivation, had no missing data in either arm, ensuring a consistent baseline for the primary analysis.

Small discrepancies emerged for other variables. Disability data were missing for 5.6% of the treatment group compared to 0.8% of the control group, while missingness for prior Level 1 attainment was also slightly higher in the treatment arm (4.6% versus 1.7%). Conversely, employment status data were more complete for the treatment group, with 1.3% missing compared to 4.3% for the control group. Despite these minor variations, missing data for all administrative variables remained below 10%, supporting the

reliability of the adjusted models and justifying the use of multiple imputation to address any potential bias from these small data gaps.

Table 14: Missing data summary by Trial Arm

Characteristic	Control Missing n	Control Missing %	Treatment Missing n	Treatment Missing %
Age	0	0%	0	0%
Sex	0	0%	0	0%
White British ethnicity	0	0%	0	0%
Has disability / health problem	6	[u]	17	[u]
Employment status	31	4%	[c]	[u]
Prior Level 1 attainment	12	[u]	14	[u]
Resides in most deprived quintile	0	0%	0	0%

Note: shorthand [c] indicates suppression for confidentiality where cell counts <5 and [u] indicates suppression of percentages for low reliability where cell counts < 30
Source: Ipsos learner surveys, Provider administrative data and ILR outcome data
Base: Control n = 716, Treatment n = 305

2.6.3. Attrition by trial arm

Table 15 shows there was an imbalance in missing data between the treatment and control groups. Almost all learners in the control group had recorded GCSE grades (less than 1% missing). However, more than 1 in 10 learners in the treatment group (10.8%) were missing GCSE grades. This likely reflects learners who started the course, but withdrew or did not sit the exam. While the overall missing grade data was low (3.5%), this imbalance required additional analysis to confirm the findings were not biased by the higher attrition in the treatment group.

Attrition was much more severe for the survey-based outcome (maths confidence). Data were unavailable for over half the randomised sample (58.5% overall), significantly limiting the analysis. Missing data were notably higher in the treatment group (65.6%) than the control (55.4%), suggesting that survey respondents may not represent the full treatment group. This creates potential bias, as these respondents could differ systematically (for example, in their engagement or motivation) from non-respondents.

Table 15: Attrition by trial arm

Outcome	Metric	Control Group	Treatment Group	Total
Randomised Sample	*Total Assigned*	716	305	1,021
GCSE Grade	Analysed (N)	713	272	985
(Admin Data)	Missingness (%)	0.4%	11%	4%
Maths Confidence	Analysed (N)	319	105	424
(Survey Data)	Missingness (%)	55%	66%	59%

Source: Ipsos learner surveys, Provider administrative data and ILR outcome data

2.6.4. Impact results with imputed data

A secondary sensitivity analysis was conducted using multiple imputation (MI) to verify that findings were not biased by missing data, such as age or prior attainment not being recorded for some learners. This analysis constructs a complete dataset by statistically estimating missing values based on available information (Table 16).

The results of the multiple imputation analysis largely confirm the findings of the main analysis, demonstrating that the primary null result was not due to missing demographic data. For the primary outcome (GCSE grade), the MI estimate (+0.17) is very close to the original adjusted estimate (+0.19) in Table 16 This stability is expected, as missingness for administrative covariates (e.g., age, prior attainment) was relatively low (<10%). Consequently, imputing these values had little impact on the final coefficient, reinforcing

the conclusion that the intervention had no statistically significant effect on academic attainment.

The only notable deviation occurred in the maths confidence, where the estimate shifted from a negligible positive (+0.03) in the adjusted model to a non-significant negative (-0.22) after imputation. This shift likely reflects the high attrition in the survey data: the original adjusted analysis relied on a small subset of learners (N=88) who had complete data for both the outcome (at baseline and endline) and all demographic covariates. Using MI to account for missing background characteristics (including baseline confidence scores), the analysis included a wider pool of learners who completed the endline survey but were previously excluded due to missing administrative and survey data (N=424). This effectively re-weighted the analysis to a more representative group of survey respondents, revealing a negative trend that was previously masked.

However, even with this correction, the result remains statistically non-significant and the analysis remains underpowered. While the point estimates suggest an increase in course completion (+11.0 ppt) and a decrease in the Level 2 pass rate (-10.0 ppt), these results are statistically inconclusive. The large standard errors and wide confidence intervals reflect the high uncertainty caused by missing data, data imputation and the small number of participating providers.

Table 16 Impact estimates using Multiple Imputation (All Outcomes)

Outcome	Impact estimate	Effect size	p-value	Standard error (SE)	95% Confidence Interval	Achieved MDES
GCSE Grade	+0.17 points	d = 0.08	0.528	0.27	[-0.36, 0.70]	0.79 points (0.39 SD)
Level 2 Pass (AME)	-10 ppt (-0.10)	h = -0.21	0.747	0.31	[-0.71, 0.58]	90.8 ppt
Course Completion (AME)	+11ppt (+0.11)	h = 0.40	0.704	0.29	[-0.46, 0.68]	85 ppt
Maths Confidence	-0.22 points	d = -0.13	0.271	0.2	[-0.61, 0.17]	0.59 points (0.36 SD)

Source: Ipsos STATA analysis

Notes: AME = Average Marginal Effect. Coef. = coefficient from OLS regression. ppt = percentage points. Effect size is Cohen's h for binary outcomes and Cohen's d for continuous outcomes. None of the results are statistically significant. Standard errors clustered at the provider level.

3. Implementation and process evaluation results

Overview

This section examines the delivery of the Preparation for Maths GCSE course as experienced by learners, tutors and providers. It draws on qualitative and quantitative data from interviews, surveys, and attendance records collected as part of this research. The aim of the IPE analysis was to investigate central features of trial delivery, including compliance, attrition, fidelity, feasibility and readiness for delivering the trial in the future, with recommendations for future implementation. These findings indicate high fidelity and feasibility, with positive experiences of implementation supporting readiness for trial and perceived improvements in learner progress.

3.1. Summary of results

This section presents findings from the Implementation and Process Evaluation (IPE) of the Preparation for Maths GCSE pilot trial.

Compliance: All participating providers submitted the required learner data to the Ipsos Data Portal. Whilst most were late in doing this, the data was high quality and complete. This was enabled by mandatory fields in the submission template and support provided by the Ipsos research team.

Attrition: 7 providers withdrew from the trial after signing a contract but before randomisation. A further 7 withdrew after randomisation and the start of the trial. Reasons included loss of interest, staff changes and lack of capacity. Attrition was not found to be influenced by allocation to treatment or control groups.

Fidelity: The intervention was delivered as intended in terms of the numbers of sessions delivered and the timing of these. Tutors were flexible in their delivery, adjusting session length, combining content, or revisiting topics. Some control group tutors taught elements of study skills such as using past papers, signposting learners to online resources, and discussing approaches to the exam which presents a variable BAU state in the control group

Feasibility: The course was feasible to deliver and well received amongst learners and tutors. Learners were engaged in the content, and tutors reported positive experiences of delivering this. Training was easy to access and not burdensome, though some suggested ongoing support would be helpful. Low staff turnover ensured continuity of delivery.

Readiness for Trial: The intervention and pilot trial design could be considered scalable for a full trial. The intervention fits well into existing GCSE Maths courses, and data collection worked well, although the surveys and interviews could be conducted closer to when the session is delivered to improve recall.

Learner Progress: Learners in both treatment and control groups self-reported improved confidence in maths and feeling better prepared for exams. Treatment group learners self-reported improved study and revision skills and said they found the growth mindset session especially helpful. They also reported better confidence and attitudes toward learning. Most learners across both groups were entered for the foundation tier of the GCSE Maths exam.[60]

3.2. Compliance

All providers participating in the trial had successfully submitted their learner data by March 2025, though this was later than initially expected.[61]

Providers were required to upload data on learners taking part in the trial to the Ipsos Data Portal. This included learner demographic data, contact details and attendance at each of the 7 sessions that made up the course. It also included confirmation that learners had been provided with information about the trial and given the opportunity to opt-out of taking part. Providers were asked to submit their learner data within 2 weeks of the start of term, although this request was unachievable for providers with learners that moved courses at the start of the academic year.[62] As a result, most providers were delayed in submitting their learner data, with only 2 providers having done this by October 2024.

Providers found the data requirements for the trial to be manageable as this was data they were already required to collect and submit as part of their ILR return. The only additional data required was learner attendance at each session (for those in the treatment group). Learner data uploads were typically completed by a strategic lead within the provider, such as a curriculum manager, sometimes with support from a data manager.

[60] A GCSE Foundation exam is the lower tier of assessment offered in some subjects, designed to be more accessible and support learners to attain a pass grade (Grade 4 or 5).
[61] Trial readiness packs specified that data submission should be completed in the first 2 weeks of term.
[62] This requirement did not account for learner movement between courses in September and early October, meaning 'failure to comply' was not the fault of providers.

Most providers submitted data to high quality and completeness, despite initial inconsistencies and delays.

This was due to the embedding of compulsory fields and rules within the data submission template, which were designed to drive quality and accuracy). This meant that the learner data was complete and in a consistent format from all providers. However, it did result in some providers submitting default entries for some mandatory fields, in particular date of birth, suggesting that additional checks should be completed should this approach be used in future. The only missing data was telephone numbers, which was missing for 14% of learners, as this was not a compulsory field. We would recommend that if this approach was taken to collecting learner data for future trials, the telephone field should be made mandatory to improve the survey response rate and support qualitative recruitment.

Some providers faced challenges in uploading their learner data.

This included lack of experience with data and spreadsheets, error messages when attempting to upload due to data being missing or in the wrong format and confusion about requirements. These were resolved through dedicated support provided by Ipsos via email and 1-to-1 calls with providers to resolve issues.

A key requirement of the trial was that participating learners had to be aged 19 or over by 1 September 2025 to be eligible. However, 5 providers enrolled learners who were under the age of 19. These ineligible learners represented 5% of the total number of learners submitted across all providers (with one provider accounting for 4.5% alone). To ensure compliance with the trial requirements and data sharing arrangements, these learners were removed from the final analysis. For future trials with an age restrictions, data collection systems should include validation rules to ensure only learners eligible learners are submitted.

3.3. Attrition

A total of 14 providers withdrew from the trial between contract signing and trial implementation.[63]

The CONSORT flow diagram provided in Figure 1 (in the Sample size section) shows that:

- 7 providers withdrew after contract signing but before randomisation.

[63] While not counted as formal attrition from the trial, an additional 9 providers who initially agreed to participate withdrew before signing contracts.

- 7 providers withdrew after randomisation and the start of the trial, (3 control, 4 treatment), equivalent to 22% who were randomised then withdrew.

No learner data were submitted from any of the providers who withdrew.

The main reasons for withdrawing after signing a contract and before randomisation were loss of interest, staff changes and insufficient tutor capacity.

> "I don't think there was anything additional that could've been done. It was literally a capacity issue here. There was no issue with anything else." – *Provider, Withdrawn from the trial*

Other reasons included unclear initial communications about participation entailed and how the trial differed from other Multiply funding.

> "I would have thought Multiply Trials would have been looking at the programmes that we'd put on through the Multiply funding and to see how they had gone. But it didn't seem to be. It was going to be about maths provision but not Multiply maths provision." – *Provider, Withdrawn from the trial*

The 3 control providers who withdrew after randomisation cited insufficient numbers of tutors or learners, lack of interest, and inadequate admin support for uploading learner data. The 3 treatment providers who withdrew at this stage attended the tutor training but subsequently disengaged – they stopped responding to communications and did not submit their learner data.

Attrition of learners totalled 19 across the providers that remained in the trial.

Whilst the research team were not always privy to the reasons for these withdrawals, in the instances where a reason was given, it was a result of learners dropping out of the course, as opposed to the trial specifically. The treatment sessions intentionally began later in the first term to minimise the impact of drop-outs and late joiners, and this is reflected in the relatively small number of withdrawals.

There were low levels of attrition once the trial was underway due to ease of intervention delivery and trial data requirements.

Reasons given by providers for continuing on the trial included the data requirements being manageable and tutors in the treatment group finding the training accessible and sessions easy to deliver as part of the existing GCSE Maths curriculum. This was reflected in feedback from the Managed Service Supplier (MSS) responsible for recruitment to the trials. They reported low levels of withdrawals from the trial as a result of the tutor training requirements being non-burdensome, the ability to embed the intervention within normal delivery and tutors being positive about delivering the course.

Providers who took part in the trial would have continued regardless of whether they had been assigned to treatment or control group.

Providers who took part in the trial had a preference to be assigned into the treatment group to access the tutor training that they perceived would benefit their learners. However, they understood that it was a trial and those assigned to the control group were happy to continue. This is reflected in the fact that no providers withdrew as a result of their allocation to treatment or control.

3.4. Fidelity

The 7 sessions that made up the intervention were found to be delivered as intended in terms of the number and timing of sessions delivered. They were delivered alongside existing GCSE Maths content. Tutors used the flexibility encouraged in training to cover the content of the 7 sessions in a way that worked for them and their learners. Although the BAU GCSE Maths course does cover study skills, delivery of these is typically not structured and resourced in the way that the treatment study skills sessions were.

3.4.1. Session Delivery

Tutors were able to deliver the 7 study skills sessions, with 5 sessions delivered in the autumn term and the remaining 2 before April.

Session delivery was expected to start after the 42-day probation period at the start of the academic year. However, uploads to the Ipsos Data Portal show that some tutors delivered sessions before then. A key assumption in the Theory of Change was that tutors would be able to include the study skills sessions without reducing the Maths content and this was found to be true. Tutors' professional judgement influenced when sessions were delivered. For example, tutors expressed that the revision and exam-specific content may have been more beneficial for their learners if delivered after Easter and closer to the exam. There was 1 case where staff turnover impacted the fidelity of the intervention, as there was not a sufficient handover from the tutor leaving to enable delivery to continue.

Learner attendance at the study skills sessions, whilst high, varied due to external factors.

Data provided by tutors, detailed in Table 17, showed that attendance for each session was two thirds (67%) on average across the 7 sessions. Session 2 had the highest level of attendance with 84% of learners attending all or part of this. Sessions 6 and 7 had the lowest levels of attendance (54% and 57% respectively). Overall, 64% learners attended all or part of at least 5 sessions, i.e. the threshold to be considered compliant.

Table 17: Attendance rates across sessions in the treatment group

Session name	Number of treatment learners who attended fully/partly	Proportion of treatment learners who attended fully/partly
Session 1: Growth mindset and resilience	201	62%
Session 2: An introduction to GCSE Maths	272	84%
Session 3: Study skills	236	73%
Session 4: Using a calculator	203	63%
Session 5: Using IT	242	75%
Session 6: Revision techniques	173	54%
Session 7: Exam techniques	185	57%

Source: Learner data submitted to the Ipsos Data Portal by providers

Note: Results show proportion based on treatment providers that uploaded attendance data. Based on 322 treatment respondents. Non-responses and control group learners are excluded.

Survey responses showed that the most common reasons for low or no attendance at the study skills sessions were personal or family problems, ill health, lack of time or conflicting commitments, or a change in personal circumstances. This is supported by the learner survey where over half (54%) of treatment learners reported attending ‘all’ of the course and just over a third (37%) reported attending ‘most’ of the course. The commitments that adult learners have outside of education meant that attendance at each of the 7 sessions that make up the course was not guaranteed. To encourage attendance and meet the needs of their learners, some providers used a hybrid model, whereby they delivered sessions with some learners in person and some online. Resources were also made available online for learners to review (a key assumption outlined in the Theory of Change was that learners would be able to access and use online resources). Whilst remote learners were still exposed to the content, the experience for online learners may not have been consistent with those attending in

person; for example, group tasks being completed individually with less opportunity for peer support and learning. However, this flexibility helped maximise exposure to the content of the 7 sessions.

3.4.2. Content and Structure of Sessions

The duration of each of the sessions, intended to be 1 hour, varied and was determined by learner engagement.

Tutors reported that some sessions, such as the 1 on calculator skills, were delivered in less than an hour. Conversely, the sessions on revision skills and exam techniques took longer than expected because tutors observed high levels of learner engagement and chose to prioritise spending more time exploring these skills. The content of each session was said by tutors to have always been covered even when delivered in shorter time frames.

The Preparation for Maths GCSE sessions were broadly delivered as intended, with some tutors adapting to meet the needs of their learners.

Tutors integrated the 7 sessions into their existing curriculum by condensing the material to fit within their allocated teaching hours, extending session timings or in some cases revisiting the content. Sessions were merged when tutors felt that the content was aligned or could be covered in a shorter time and were revisited when the content had been particularly impactful. Tutors were equally comfortable adapting the session materials. This included modifying slide decks and refining online resources to simplify the content for their learners or embedding the sessions within 2-to-3 hour lessons.

> "I did adapt certain bits, but otherwise I did not delete anything. I used the full content with added bits, to allow them a lot more time to develop, because we've got 2-and-a-half hours twice, so 5 hours a week, which allowed me just to stretch it all a bit more for them." - *Tutor, Treatment group - Wave 1*

High fidelity across the treatment group was attributed to clear and engaging training materials. Future trials should consider following a similar tutor training model with the potential addition of optional 'check-in' sessions. This could provide valuable peer support and ensure high quality delivery without imposing an excessive burden on tutors, further strengthening fidelity to the intervention.

3.4.3. Business as usual

Control Group's Experience of BAU

The BAU GCSE Maths course delivered by control group providers was reported as containing content related to study skills, with 94% of learners in the control group

attending at least 1 type of study skill session. The content that control group learners were exposed to is presented in Table 18, with the most common being using a calculator, an introduction to GCSE Maths and exam and revision techniques.

Table 18: Control group attendance at study skills sessions

Attendance	Growth mindset/ resilience	Intro to GCSE Maths	Study Skills	Using a calculator	Using IT	Revision techn-iques	Exam techn-iques
Attendance (Control)	29%	75%	48%	76%	28%	63%	69%

Source: Endline survey
Base: Control learners, N=328

Tutors in the control group saw the value of teaching study skills and mentioned using past papers, signposting learners to online resources, and discussing approaches to the exam. 1 tutor was developing resources for a lesson on using a scientific calculator as part of their Continued Professional Development (CPD) and 1 control group learner identified this as a gap in their BAU course.

> "One thing I would say that's missing, and this will sound really stupid, is how to use a calculator. There should really be a lesson on how to use your calculator." - *Learner, Control group*

Treatment Group's Experience of BAU[64]

Tutors in the treatment group reflected that BAU delivery of GCSE Maths courses consisted of less structured delivery than the intervention's dedicated study skills sessions. As noted, tutors acknowledged the importance of study skills alongside GCSE Maths content and incorporated teaching of these into their BAU delivery. However, tutors typically taught these skills informally throughout the year, and not as dedicated sessions with specific resources to aid understanding. The structure of the intervention and its resources was considered a more practical and time-efficient way to teach these skills.

> "During the term and during the year, I'd made mention of various things as needed, but the presentation itself brought everything together and was useful time to actually discuss the strategies themselves"- *Tutor, Treatment group – Wave 2*

[64] Treatment tutors' reflections of BAU delivery of a GCSE Maths course was retrospective and drew on their experience during previous academic years outside of this trial.

This could suggest that in some cases BAU did not differ substantially from the intervention in terms of study skills content, but in how this type of content was delivered. However, the potential for recall bias in tutors that have recently delivered the intervention should be noted.

Contamination of the "Business as Usual" GCSE courses

There was some evidence that tutors in the control group accessed training that influenced their BAU teaching. One tutor accessed training led by Pearson about mastery teaching of maths. They had not particularly engaged with the content of the training but described it as similar to that covered in the 'Growth Mindset' session, given the training promoted a teaching style that involves:

> "Celebrating mistakes and appreciating the fact that many things are a case of, 'I can't do this yet,' rather than, 'I can't do this full stop.'" - *Tutor, Control group – Wave 2*

Interviews with treatment tutor and control tutors suggest that the sharing of trial-related resources only took place internally and was therefore not an issue for contamination. Given no tutors indicated resources had been shared externally outside of their organisation and trial randomisation took place at the provider-level, the likelihood of contamination can be considered low.

3.5. Feasibility

Feedback from tutors and learners suggested that the Preparation for Maths GCSE course was feasible to deliver and well received.

There was evidence of strong learner engagement and positive experiences of tutors delivering the course. Tutors highlighted a broadly positive experience, noting ease of delivery and how the intervention enabled them to better formalise and integrate good practice and pedagogy. Tutor experiences of training and support were positive and perceived as minimal burden, though the light-touch nature of the training and lack of ongoing support did have some drawbacks. Staff turnover was not found to be a widespread barrier to delivery, though one example demonstrated the significant risk it can pose. From the learner perspective, the intervention was perceived as useful, and thus feasible, despite some concerns around the compressed timeframes for curriculum content. Such barriers were largely overridden by strong engagement amongst learners and tutors, alongside high-quality delivery of the intervention and broader GCSE Maths course.

3.5.1. Experiences of intervention delivery

Tutors had a positive experience delivering the intervention and considered it feasible to deliver as part of the GCSE Maths course.

There was strong understanding of, and agreement with, the rationale underpinning the intervention amongst tutors. Whilst they generally felt familiar with study skill principles prior to the trial, the intervention enabled some tutors to consolidate their approach to application in practice:

> "Some of the sessions were really useful for me, as in I could see the importance of focusing on those sessions for the learners. So, even if I carry on teaching next year, I'll probably include them in my sessions" – *Tutor, Treatment group – Wave 2*

Tutors found the structured guidance and delivery materials to be useful as it meant they required little preparation before delivering the sessions.

> "It was useful having the resources all as 1 brand when I was then presenting. Firstly, I didn't have to prepare the resources because they were already prepared and they were a consistent format, so the learners got used to that." - *Tutor, Treatment group – Wave 2*

Tutors were able to deliver the 7 sessions within the existing curriculum because they had flexibility over what was covered in each session. For example, adult GCSE Maths classes typically last 2-3 hours, so tutors could reduce the usual maths content to accommodate the Preparation for Maths GCSE session.

From the learners' perspective, the intervention was also considered broadly applicable and sufficiently embedded within the course.

This is reflected in 83% of learners in the treatment group reporting that they were satisfied with the GCSE Maths course, although this was not significantly different to the satisfaction of 85% of learners in the control group. Treatment learners who recalled attending each session were asked how engaging (on a 5-point scale from very engaging to not at all engaging) and useful (on a 5-point scale from very useful to not at all useful) they found each session. The level of engagement and usefulness of the sessions was similar across all 7. Table 19 shows a breakdown by session, showing the percentages of those that found the sessions very engaging and fairly engaging and those that found the sessions very useful and fairly useful.

Table 19: Endline survey learner feedback by session

Feedback	Growth mindset/ resilience	Intro to Maths GCSE	Study Skills	Using a calculator	Using IT	Revision techniques	Exam techniques
Engaging	88%	91%	88%	90%	92%	82%	91%
Useful	93%	90%	88%	94%	91%	83%	92%

Source: Endline survey

Base: Treatment learners who recalled attending the session, N=78-98

Learners who took part in interviews considered the "Growth Mindset" session as particularly useful to apply to their learning throughout the course, alongside the more practical components (e.g. Calculator and IT skills). Learners who recognised the applicability of these sessions discussed the value of dedicating this time to theoretical approaches underpinning their learning and found the printed materials useful to refer back to. Moreover, learners considered these sessions as part of a holistic approach to managing their studies, supplementing their experience rather than increasing workload or burden:

> "It didn't feel like we were doing anything exceptional, any extra […] It felt like a natural part of the lessons." - *Learner, Treatment group*

However, some learners saw the intervention as disjointed from the course and a distraction from the curriculum.

Comments in the endline survey highlighted that learners felt the pressure of learning an entire GCSE course in a year. Learners who were interviewed and expressed concern about the timeframes of the course perceived the intervention to be at times misaligned with the wider GCSE Maths content (for example, introducing ratio tables before they had covered ratio as a maths concept) and an inefficient use of their learning time closer to the exam period.

> "I thought that they were just something that I suppose was a bit of a tick-box exercise […] I was already familiar with a lot of it […] I feel like I personally would have preferred to just study the content and continue down that path. " - *Learner, Treatment group*

The Preparation for Maths GCSE course was perceived to align well with organisational structures (and barriers) apparent within the adult education sector.

The intervention did not require additional learner recruitment and instead relied on established approaches to enrolment for the GCSE Maths course. Moreover, the

intervention was designed to account for a variety of approaches to teaching adult learners GCSE Maths (for example, in compressed time periods, delayed enrolment periods or weekend/evening classes), through 7 short sessions with some flexibility on delivery timeframes.

> "You know, we're talking about colleges, adult education colleges, we're talking about community settings, we're talking about workplace providers. There's all sorts of different ways that Maths GCSE is delivered in an adult setting." - *Product developer*

Tutors considered the Preparation for Maths GCSE training to be accessible and minimal burden to attend.

The training was initially intended to be interactive, in-person and an opportunity to discuss the pedagogical underpinnings of the intervention. However, the practicalities presented by the pilot trial – including the need to deliver training to tutors in different locations with varied work patterns – meant that training was instead delivered as a 2-hour online webinar format and recorded for non-attendees. Slide decks and lesson plans were provided following the training session. Providers and tutors reflected on the ease in which they could attend without impacting their workload or teaching commitments.

> "We had plenty of notice for the training session, and that enabled us then to fill the gap and either merge a class or get a cover tutor in to cover the classes for the tutor that was not going to be there on that day. So, I think we were given plenty of time to do it" - *Provider, Treatment group*

The MSS (responsible for recruitment of providers to the trials) considered this approach to training as an important factor in recruitment and retention.

> "I think the adaptability of it is shown with how little withdrawals we've had since they began delivery. I think the training made it a lot more accessible as well." - *Managed Service Supplier (responsible for recruitment of providers to the trials)*

The training content was considered useful amongst tutors who said that it sufficiently equipped them to deliver the sessions.

This provides evidence that the intended outputs from the intervention, including lesson plans, resources, guidance and tutors trained, were delivered as intended. Tutors considered the training to be informative and sufficient in the detail that was covered. They considered it a manageable commitment to attend as they were informed of the mandatory session with sufficient notice. The format of the training worked well for tutors, and the embedded 'question and answer' section provided them with the opportunity to seek clarification on any aspects they were unsure of. Queries raised by tutors during the

training related to the extent to which the intervention could be adapted to meet learner needs and how far they could modify the teaching slide decks.

> "When we needed the support, we asked, but we didn't need that much support. It was clear, straightforward." - *Tutor, Treatment group – Wave 2*

Whilst the light-touch nature of the training was welcomed by tutors, it did mean that they did not have direct access to teaching support during the academic year.

Treatment tutors' engagement with the trial and access to support was typically confined to the training session. Some suggested that ongoing support beyond the single training session provided at the start would have been useful. They felt additional opportunities to meet and discuss implementation with other tutors may have been beneficial for their confidence and to support ongoing delivery. However, the low-burden training requirements were appreciated by staff with busy timetables.

Strategic leads in provider organisations were typically responsible for trial data requirements, freeing tutors up to focus on delivery.

Whilst some tutors were responsible for informing learners about the trial and its requirements and uploading learner data to the Ipsos Data Portal, this was typically led or supported by managerial and administrative staff. This improved the feasibility of delivering the intervention as tutor requirements were mainly confined to delivery and recording of learner attendance.

3.5.2. Enablers to delivery

High-quality teaching and access to IT facilities facilitated the delivery and feasibility of the Preparation for Maths GCSE course.

Interviews with learners, and in some instances tutors, highlighted the importance of high-quality teaching to ensure both the wider course and the intervention sessions were delivered well. Learners reflected on the important role of the tutor in enabling them to engage with lesson content, alongside opportunities to reflect on their learning to leverage the skills being developed. Examples of these facilitative teaching approaches (and more generally throughout the course) included group tasks, and 1-to-1 support when required.

Another factor that supported the introduction and practicalities of delivering the intervention was the provider organisation's use of and access to IT resources. Amongst provider organisations that already accessed and embedded IT within teaching approaches, both tutors and learners felt confident using IT to aid the teaching and learning of maths and deliver the "IT Skills" session.

3.5.3. Barriers to delivery

Staff turnover when multiple staff were not trained

There were minimal examples of prolonged absence of tutors. However, 1 treatment tutor resigning in November 2024 had a significant impact on delivery. The provider reported a lack of clarity on what sessions had been delivered and was unable to clarify whether future delivery was planned for the remainder of the academic year. Whilst staff turnover is a potential risk to successful and sustained delivery of the intervention as intended (and therefore sufficient dosage amongst the treatment group), this can be mitigated by effective handovers that signpost to the recorded training session. Moreover, ad-hoc “refresher” training sessions throughout the academic year could also help minimise the impact of mid-year staff departure. Although staff turnover in this case had a large impact on delivery of the intervention, the incidence of staff turnover during delivery was low. Future trials spanning a full academic year could offer refresher training courses to tutors unable to attend the first session, ensuring consistency of delivery and to reduce the impact of any staff turnover.

The compressed time period that GCSE Maths courses are delivered in adult education, combined with the broader commitments of learners, were barriers to delivering the intervention as intended.

Whilst GCSE Maths is normally taught to Key Stage 4 learners (aged 14 to 16) across 2 to 3 academic years in England, adult learners tend to take the course over 1 academic year. Some learners who were already confident with study skills, or those who were looking to upskill, perceived the intervention to have intensified the already compressed timescales. They felt their time may have been better spent learning curriculum content instead.

> "I think maybe if people could be given the option of engaging in them (study skills sessions) outside of their dedicated course time. I know you might get less people sign up for it that way or engage with it that way, but when you're given, like I said, such an extensive course to study in such a short space of time, each hour of learning is really precious. " – *Learner, Treatment group*

To address this concern, tutors facing time pressures were able to adapt the intervention to reduce the time required for delivery. For example, tutors were able to effectively merge and prioritise certain sessions, taking an adaptive approach to delivery which was mindful of learners’ teaching time.

The external commitments and responsibilities of adult learners were also recognised as a barrier to engagement and attendance for some.

Commitments included childcare/caring responsibilities and employment commitments, meaning buy-in and engagement was at times challenging across both treatment and

control groups. Whilst this contributed to lower attendance amongst some cohorts, tutors reflected on generally higher levels of engagement amongst adult learners compared to younger age groups. This highlights the importance of sharing resources and informally revisiting the intervention content for learners who were unable to attend.

3.5.4. Stakeholder perception and engagement towards the intervention

Stakeholders reported strategic demand for new adult education interventions, including to support development of study skills.

The Preparation for Maths GCSE course was informed by research findings and practical experience within adult education settings. It was therefore considered by the developer to be meeting sector demand. The Managed Service Supplier responsible for recruitment to the trials also considered the trial-adapted version as a successful product that was "market-ready".

The Preparation for Maths GCSE course addressed demand for interventions aimed at improving adult learner outcomes.

Treatment tutors intended to deliver the intervention – either in full or in part – next academic year following the end of the pilot trial. Staff at adult education institutions with a high proportion of learners from outside of the UK particularly recognised the value of the intervention to learners who have a good understanding of GCSE Maths concepts, but are less familiar with English exam and course requirements. This demonstrates a key short-term outcome outlined in the Theory of Change – increased awareness of adult learners' background and needs.

There was some evidence of wider demand for the intervention, particularly amongst control providers and tutors.

Though allocation to the control group did not contribute to attrition from the trial, there was consensus amongst providers and tutors that treatment allocation was preferable as it was perceived to provide tutors with access to innovative teaching methods. Both providers and tutors highlighted a perceived lack of development opportunities and ideas available in the adult education sector more broadly, beyond maths and numeracy. Given the strong demand from control group tutors for new ideas and approaches to teaching, future trials should plan to share intervention resources (alongside trial findings) with control groups.

3.6. Readiness for Trial

The ease with which the intervention integrates into existing GCSE Maths courses, and the effective data collection methods used means this pilot could be scalable for a full

trial. However, this would be dependent on higher rates of recruitment and appetite amongst adult education providers. Analysis at the trial scoping stage highlighted that a fully powered trial would have required 90% of all adult education providers offering GCSE Maths courses in England to take part. Any future trial could be improved with more regular check in points throughout the course, which would support consistent delivery of the intervention, and data quality could be improved by considering the timing of data collection.

3.6.1. Intervention readiness

The ease with which the intervention integrates into the existing GCSE Maths course suggests it could be effectively scaled.

Tutors were able to deliver all 7 sessions, delivered in 2 blocks, and reported that this was manageable alongside their teaching commitments. In most cases, the timing of the sessions was perceived to have aligned well with the academic year. This indicates that the intervention could be scaled across a larger number of education providers. Whilst there were individual opinions on sessions that were more or less useful, there was no consistent feedback from either learners or tutors to indicate that any specific sessions were not useful and could have been removed.

For a full-scale trial, tutor training would have to be thorough to ensure consistent delivery across a larger number of providers.

The original plan for a day-long, face-to-face training session was replaced with online webinars due to shifts in the trial timeline and recruitment numbers. The product developer felt this was a significant compromise, as the intervention is essentially a set of presentation slides, making the quality of delivery paramount for impact and consistency. If scaled, tutor training could be more intensive to help ensure consistent delivery across a larger number of providers.

In order to recruit providers to the trial, a bottom up and top-down approach was used incorporating communications from DfE and from local authorities.

In addition to communications about the trial from DfE, providers were also contacted by local authorities and education sector representative bodies. Other approaches to recruitment included using social media, including LinkedIn, and attendance at conferences and events to reach eligible providers.

3.6.2. Methodology readiness

Provider understanding and engagement with the trial concepts was strong.

Providers in both the control and treatment group understood the randomisation process and expressed confidence in relation to their delivery and data-sharing responsibilities.

The trial-readiness packs, the intervention training, and support provided by the Managed Service Supplier and the Ipsos research team facilitated this throughout the trial period.

The trial drew on both qualitative and quantitative data collection methods to gather insights from a broad range of stakeholders.

Surveys were found to be an effective tool for gathering baseline and endline data from learners in the trial and were shared via multiple channels, with follow-up both online (issued by email with SMS reminders) and by telephone. This was largely effective with 221 responses received for the baseline (67% CATI cooperation rate, not possible to report online response rate as unknown how many learners received the open link), and 441 responses for the endline (24% online response rate, 25% CATI response rate, 88% CATI cooperation rate). Qualitative interviews facilitated in-depth insights from providers, tutors, learners and wider stakeholders (including those involved in intervention development and trial recruitment). Lesson observations (of session 6 and session 7 amongst some treatment providers) generated further insight into the extent to which the sessions were delivered in line with the trial protocol and learner engagement, particularly where delivery was partially online.

The Ipsos Data Portal was an effective way of gathering learner data from all trial providers in a consistent format.

Generally, providers found the Ipsos Data Portal to be user-friendly. Those who faced challenges in uploading their data received prompt support to resolve any issues. The quality and completeness of the data received confirms that it was an effective means of gathering learner data, which was subsequently used to support recruitment to the surveys and in-depth interviews. Future trials would benefit from using rule-based data uploads to the portal (or another trusted third party) to enable high-quality and consistent data collection, particularly when data linking to administrative datasets or follow-up qualitative research is planned.

The timing of the learner interviews, conducted after all 7 sessions were complete, influenced recall.

Participants generally remembered the final 2 sessions more clearly than the earlier ones. For future trials, consideration should be given to the timing of data collection to help aid recall. This could involve conducting a first round of interviews after the initial block of sessions or supplementing the final interview with short, periodic surveys after each session.

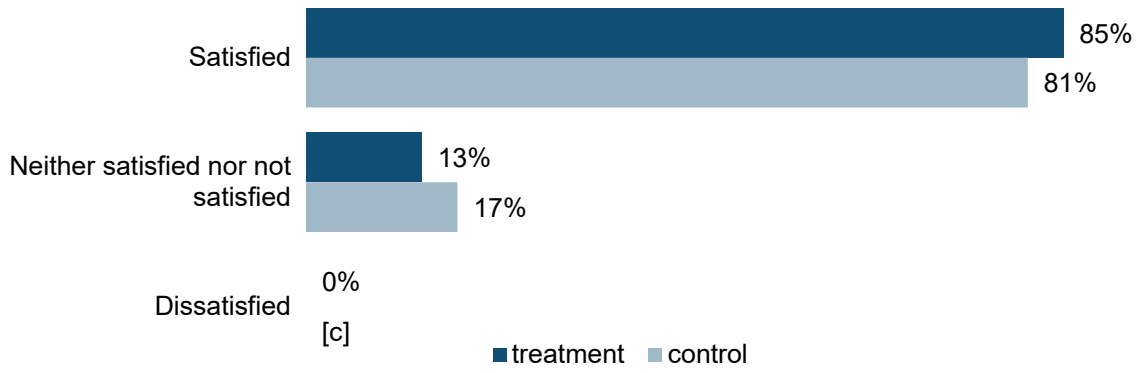
Learners, particularly those in the control group, were not always aware that they were participating in a trial.[65]

Significantly more learners in the control group were unaware they were participating in a trial compared to learners in the treatment group (46% vs 27%, difference of 19 percentage points). Learners that were aware they were part of a trial typically agreed that the information provided about the research was easy to understand (91% agreement in the treatment group). This could suggest that it was not the content of the information that was a barrier to awareness, but perhaps when and how frequently information was shared. To improve learner awareness in future trials, introductory resources about the trial (e.g. slide deck or script) could be developed for all participating tutors to embed in BAU teaching. In addition, a dedicated data field on the data portal could enable the research team to track tutor dissemination during or soon after the baseline stage. Recall in future trials could also be supported by taking further steps to ensure data collection timescales are not reliant on retrospective approaches. For example, consideration could be given to conducting interviews as soon after delivery as possible to improve recall.

Learners who were aware they were part of a trial felt positively about their involvement, and the experience did not differ significantly between treatment and control groups.

Among treatment group learners who knew they were in a trial, 85% were satisfied with their overall experience, 80% agreed they would be happy to take part in future research trials; and 78% would recommend trial participation to others (18% were neutral). Figure 2 shows overall trial satisfaction.

Figure 2: Endline: Overall, how satisfied or dissatisfied were you with the experience of taking part in a trial?



Source: Endline Learner Survey

Base: QTRIALSATISFACTION Endline Preparation for Maths for GCSE participants who

[65] Both control and treatment groups were expected to know that they were taking part in a trial so they could opt-out of having their data shared (for interview and survey invitations) and / or linked to the ILR.

were aware they were taking part in a trial n=244 (treatment, n=75; control, n=169)
Notes: The chart shows net satisfaction scores, where 'satisfied' combines 'very satisfied' and 'fairly satisfied' responses, whilst 'dissatisfied' combines 'very dissatisfied' and 'fairly dissatisfied' responses;
'Don't know' responses are excluded from the analysis; [c] denotes responses less than 5

Feedback from interviews suggested that treatment and control learners who were happy to be involved in the research were motivated by a desire to improve the course for future learners, and because they did not feel that participation took away from their own learning. 50% of learners in the treatment group and 45% of those in the control group who were aware they were participating in a trial agreed that they tried harder on the course because it was a research trial. It is worth noting the potential impact of trial participation on overall engagement with the course and subsequent outcomes.

Whilst well designed, the method of survey administration could have impacted the quality of the data collected.

Survey completion rates were 20% at baseline and 41% at endline, a difference of 21 percentage points. Of learners in the treatment group that were aware they were participating in a research trial, 79% agreed that the questions asked in the surveys were relevant to them, which was not significantly different to the control group (83%). Interview feedback on the survey itself suggested that it was well-designed, an appropriate length and user-friendly. The baseline surveys were administered in class and some learners reported feeling rushed to complete them. They felt pressure to complete the survey quickly and return to the lesson, which may have compromised the validity of their responses. While providing surveys for completion in learners' own time might help address this issue, it could also lead to lower response rates.

> "[It would have been better] if they could have given it [the survey] to us to go through in own time. Some colleagues would go through just ticking to rush through it because it was during lesson time... Most of my colleagues did not even read the questions…have time to read the questions, they were just ticking through." – *Learner, Treatment group*

Planned data collection from tutors via online diaries was unable to progress due to the timing of delivery and low uptake.

The opportunity for tutors to participate in post-session online diaries (via Ipsos' AppLife platform) was detailed in the Trial Readiness Packs for providers. Invitations to take part were issued to tutors (via provider contacts) in early October 2024. Only 4 tutors expressed interest, but they had already delivered the first 5 sessions of the course. Due to this limited interest and the inability to capture real-time experiences of delivery, the online diaries were not implemented. The poor timing of the invitation, at the start of term when tutors are busiest, likely contributed to the low level of interest.

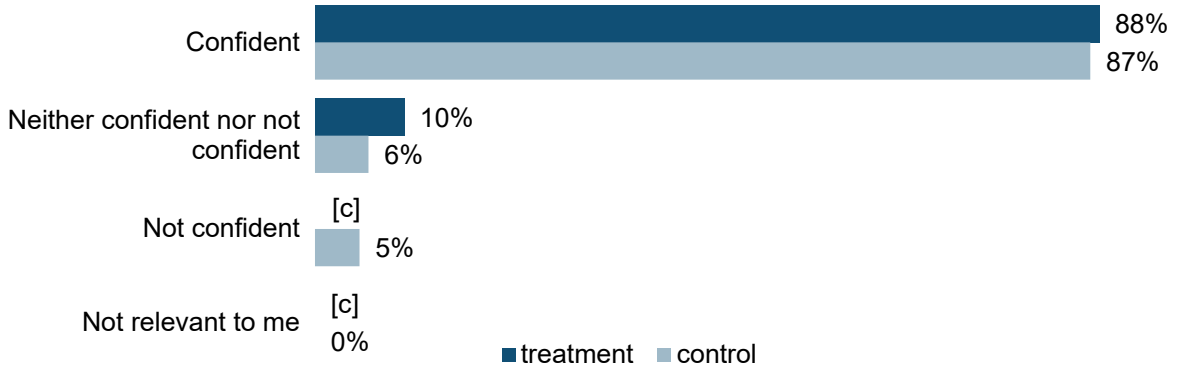
3.7. Learner progress

This section reports on the difference that participation in the course had on learners, considering the experiences of those in both treatment and control groups, based on qualitative evidence and the learner survey findings. It also discusses GCSE exam entry of learners.

Learners reported high levels of confidence in maths and exam readiness after participating in the GCSE course.

Overall, 88% of learners in the treatment group reported feeling confident working with numbers in everyday life in the endline survey. This was not significantly different for control. Equally, at the time of the endline survey: 90% of learners in the treatment group reported feeling confident checking their change was right after buying something; 90% reported feeling confident working out the best deals when shopping; 89% (of those who were parents) reported feeling confident helping their children with maths homework or talking about maths/numbers with children; 76% reported feeling confident understanding interest rates on bank statements; 92% reported feeling confident keeping track of their bank account balance, and 92% (of those who were employed) reported feeling confident working with numbers as part of their job.

Figure 3: Endline: How confident do you feel using numbers in everyday life?

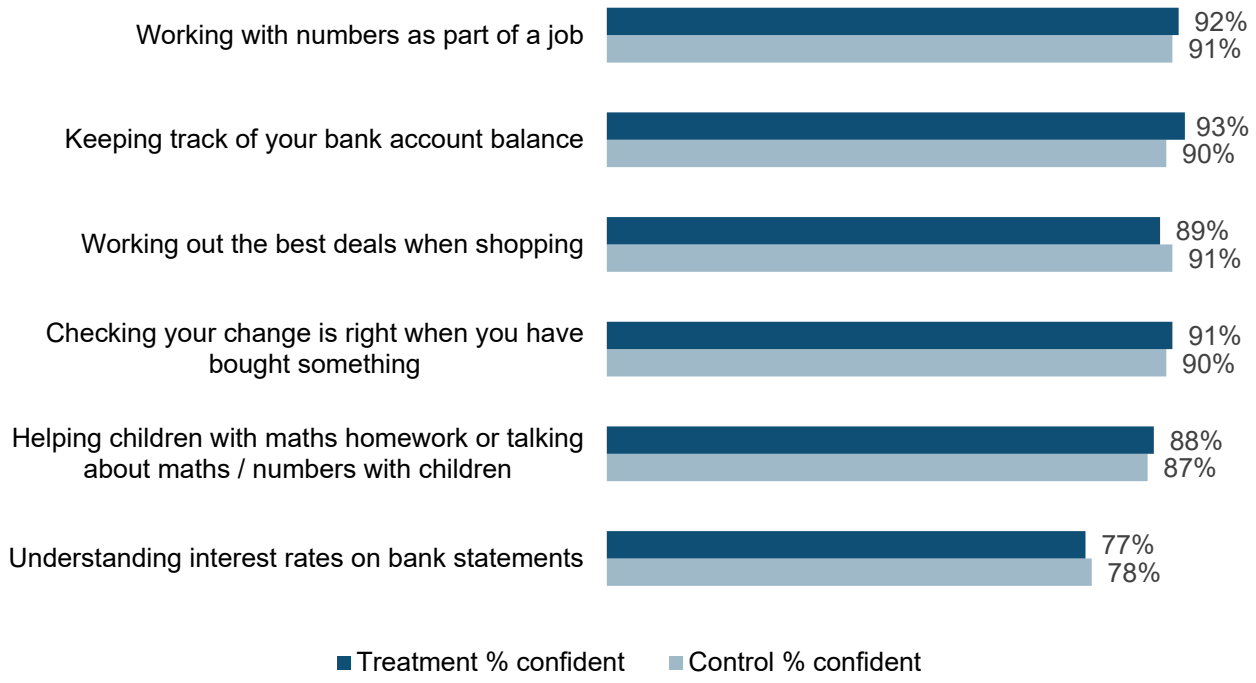


Source: Endline

Base: QCONF Endline Preparation for Maths for GCSE participants n=444 (treatment, n=113; control, n=331)

Notes: The chart shows net confidence, combining 'very confident' and 'fairly confident' responses; 'Don't know' responses are excluded; [c] denotes responses less than 5

Figure 4: Endline: How confident do you feel about doing the following things?



Source: Endline
Base: QNUMCONF Endline Preparation for Maths for GCSE participants n=195-438
Notes: The chart shows net confidence, combining 'very confident' and 'fairly confident' responses; 'Don't know' responses are excluded

The majority (78%) of learners in the treatment group reported feeling prepared for the GCSE Maths exam. This did not differ significantly from the control group at the time of the endline survey. Learners in both groups who felt prepared for the exam cited additional and targeted support from their tutor (73%), independent revision (68%) and online resources (61%) as factors that helped them feel prepared.

Learners in the treatment group identified the calculator session as particularly useful in preparing them for the exam.

> "The exam would have been 100% harder without the calculator session. It's a really good thing that I learnt." – *Learner, Treatment Group.*

Learners in both treatment and control groups who said they felt less prepared said this was due to exam nervousness, an acknowledged lack of revision and being short on time, both in their personal lives and in reference to the length of the course.

3.7.1. Learner progress in the treatment group

Treatment group learners reported improvements in their study and revision skills.

This was particularly true for learners who had been out of formal education for a significant period and felt they had no prior revision skills. Specific sessions on using a calculator, IT skills, growth mindset, and revision techniques were mentioned by multiple learners as being particularly useful.

> "Yes – initially I was struggling. But when she started giving us support on how to revise and how to learn, I got better." - *Learner, Treatment Group*

Feedback from both tutors and learners indicated that the growth mindset session was highly impactful.

It provided an opportunity for learners to discuss their previous, often negative, experiences with maths and created a space where they could encourage each other. This helped them to reframe their relationship with the subject, moving from a belief that "you can't really do this" to an understanding that maths is a skill that can be developed through practice. A learner noted it helped them to "have a go" instead of feeling embarrassed. The study skills sessions were also valued as providing an opportunity to share advice in groups.

> "The group work she did with us in those sessions was the biggest help of all, because it was also understanding other people's views on it as well as your own and the teacher's." - *Learner, Treatment group*

Tutors in the treatment group perceived positive changes in learners' confidence and attitude to learning.

Learners were observed to be taking greater ownership of their learning by dedicating time for study outside of scheduled sessions and engaging in practical applications of their skills. This included buying calculators and practicing exam papers.

> "I think it was worth doing, I was really surprised about the calculator thing, that really shocked me, I've never had them all go out and buy a calculator straight away like that. They've never done it. They've always been quite happy and thought, 'I'll buy 1 later.'" - *Tutor, Treatment group – Wave 1*

Learners reported wider applicability of the skills and knowledge learned beyond the GCSE Maths course.

For example, some learners reflected on their ability to use newly developed skills to support their children with homework. Learners that intended to continue formal education referenced the applicability of their improved study skills and broader maths abilities. Learners who were not immediately re-entering formal education, referenced

making use of their maths abilities in everyday life (e.g. in relation to household finances, shopping) rather than study skills.

These findings provide evidence in support of the intended outcomes from the intervention, including that learners would increase their knowledge of growth mindset theory and strategies to support resilience and improve their study skills.

3.7.2. Learner Progress in the Control Group

Learners in the control group whose confidence had increased due to participation in the GCSE Maths course felt more able to use maths in their everyday lives.

This included helping their children with maths homework, working with measurements for redecorating, or budgeting in the weekly shop. Others, however, said they had not really had to use maths in their everyday lives. Those who had been out of education for a while discussed an improvement in their study skills following participation in the course, although this change was not always felt to be significant.

3.7.3. GCSE Exam Entry

Learners on the trial were typically entered for the foundation tier of the GCSE Maths.

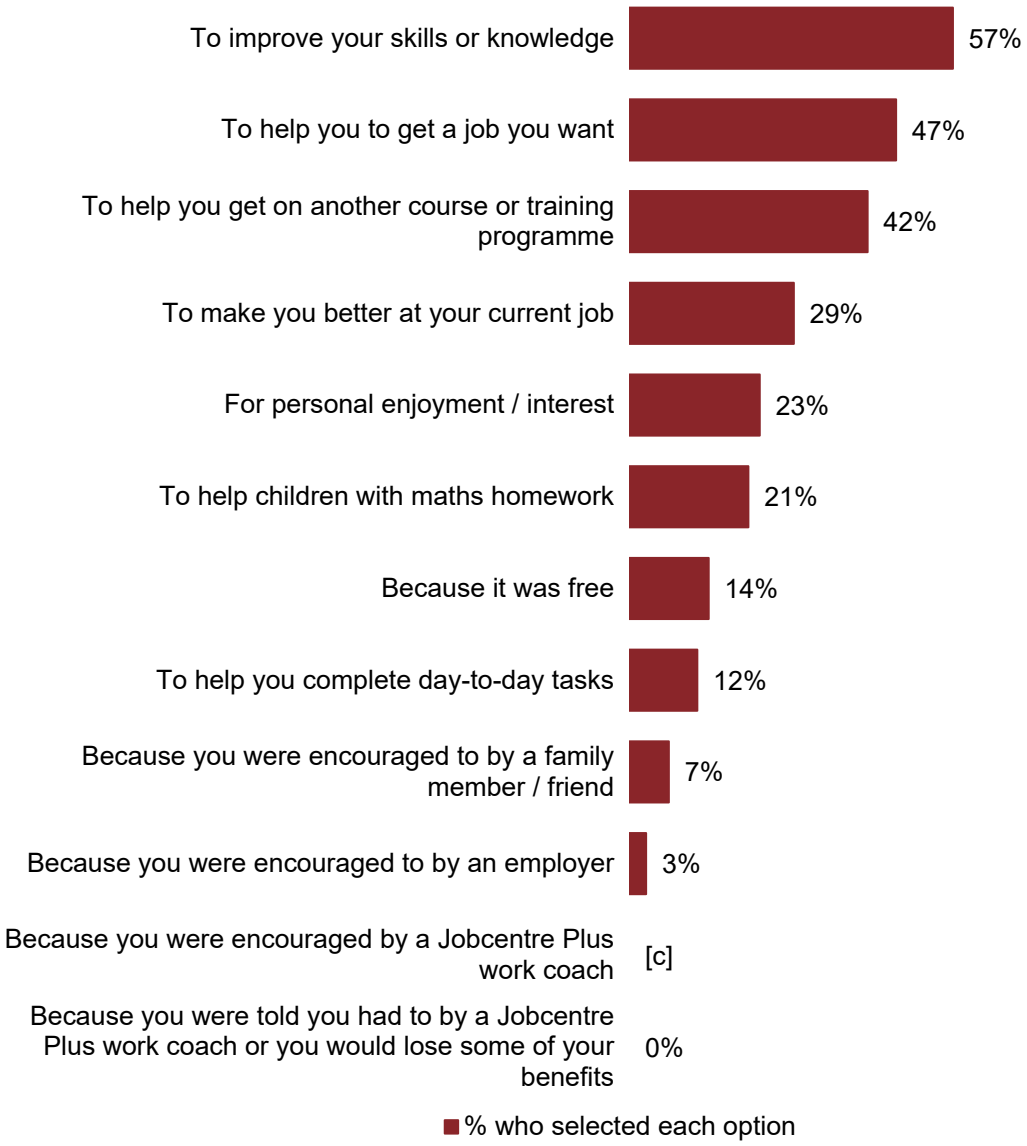
A GCSE Foundation exam is the lower-tier of assessment available in some subjects, designed to help learners achieve a pass grade (grade 4 or 5) by focussing on core content rather than more complex material required for higher grades.

Those providers that also delivered higher content would either split the group into higher and foundation or deliver to a mixed class, supplementing majority foundation delivery with some higher content. Exam entries are required to be submitted in the spring term and so final decisions were made by then. However, tier entry was typically made in autumn / winter to account for additional teaching required for the higher paper. The paper a learner was put forward for was largely based on assessments (typically mocks) and tutors' judgement of individuals' capabilities and aspirations, though learners were able to make the final decision.

Tutors acknowledged that learners often do not require more than a pass for their next step (which is achievable at the foundation tier) but demonstrated discretion where learners specifically requested a higher grade, often guided by employment or higher education requirements which drove learners to attend the course in the first place. At the start of the course, around half (47%) of treatment and control learners said they were signing up to help them get a job they wanted, and a similar proportion (42%) said it was to help them get on another course or training programme. Other reasons learners signed up were to improve their skills or knowledge (57%), to make them better at their

current job (29%) or for personal enjoyment/interest (23%). Tutors recognised the value of exam entry for most learners unless they or the learner had significant reservations regarding exams.

Figure 5: Baseline: Why do you want to do this course?



Source: Baseline

Base: QREASCOURSE Baseline Preparation for Maths GCSE participants n=221 (participants were only shown answer options relevant to them based on previous responses)

Notes: Multicode question where participants could select more than one answer; Chart excludes 'don't know' responses; [c] refers to responses less than 5

Treatment learners that completed the study skills sessions were generally positive about the impact they had on their confidence with maths and their independent study skills.

Learners in the control group also felt positively about the impact of the course on their confidence with maths and independent study skills, suggesting that the GCSE Maths course itself had a large part to play in this.

In conclusion, the Preparation for Maths GCSE pilot trial was generally implemented consistently and successfully within adult education providers, indicating the intervention could be ready for a larger-scale trial (provided key operational and methodological refinements are made). The intervention proved feasible, was delivered with high fidelity, and was well-received by tutors and learners. Key successes included tutors effectively adapting sessions, low attrition after the pilot trial began, and generally positive feedback on the ease and benefits of delivery. However, the pilot also highlighted challenges, including that most providers submitted data late, some withdrew before the trial started, and a small number of ineligible learners were enrolled, pointing to a need for clearer recruitment messaging and stricter data validation. Methodologically, the data portal was effective in most instances, though the timing of interviews led to some challenges with recall. Regarding learner progress, while both groups grew in self-reported confidence, the treatment group reported distinct improvements in study skills somewhat linked to the intervention, with the ‘Growth Mindset’ session proving particularly impactful. For a full trial, these findings recommend enhancing tutor training to ensure consistent delivery at scale and taking further steps to improve data collection approaches. The strong sector-level demand for the intervention confirms a clear appetite within the sector for a successful rollout.

5. Conclusions

5.1. Summary of findings

Before discussing the results further, this trial's significance should be noted: it represents one of the first DfE-commissioned trials with adult learners. The pilot demonstrated that study skills sessions can be successfully integrated alongside the maths GCSE curriculum in adult education settings, and has clarified the sector's business-as-usual (BAU) provision.

The Preparation for Maths GCSE course was delivered as intended and proved feasible for adult education settings. All 7 sessions were successfully delivered, with tutors effectively adapted their length and timing to fit within the existing curriculum.

Recommendation: Future trial and intervention development to consider BAU delivery of courses and programmes, ensuring the treatment experience does not require tutors to make major adaptations. This includes the training requirements for treatment tutors. Preparation for Maths GCSE is a good example of this approach.

The 2-hour online training for tutors was considered accessible and sufficient, with all treatment group tutors attending. Both tutors and learners were positive about the content of the study skills sessions. Treatment tutors observed learners taking greater ownership of their learning, including buying calculators and practicing exam papers independently, which they attributed to some extent to the study skills sessions.

While tutors and learners were positive about the sessions, the trial found no statistically significant difference in GCSE grades between treatment and control groups. Similarly, no significant differences emerged for secondary outcomes: Level 2 pass rates, completion rates, or confidence scores. However, the trial was underpowered due to its small sample size, meaning that modest but potentially meaningful benefits from the intervention would not have been detectable.

It is also possible that no difference was detected due the control group receiving study skills content as part of BAU, though this was typically less structured than the intervention. For example, almost all control learners reported attending at least 1 study skills session (from the 7 listed), with calculator use, exam techniques and revision commonly covered.

Recommendation: In the future, work with tutors prior to the Preparation for Maths GCSE course to better understand BAU approaches to providing study skills content, potentially identifying current 'gaps' or differences.

5.2. Lessons learnt

Trials can be implemented within adult education: The trial demonstrated that RCTs can be successfully implemented within adult education settings. Tutors in the treatment group found the preparation for Maths GCSE sessions fitted well within their existing teaching commitments and curriculum delivery, with the intervention integrating smoothly into existing GCSE Maths provision. While the trial experienced moderate attrition, the low levels of withdrawal once delivery began suggests that interventions that can be delivered within the existing curriculum are feasible for trialling in this sector.

High quality data from providers: All participating providers successfully submitted their required learner data to the Ipsos Data Portal, demonstrating that providers can meet research data requirements when given appropriate support. The embedding of compulsory fields and validation rules within the data submission template was crucial in ensuring data quality and completeness. However, most providers were delayed to some extent in submitting their data.

Recommendation: Future trials should allow more time for providers to submit their data. They should also stress from the start how important early data submission is for the trial, making this clear in all communications to providers. Providers should be encouraged to ask for help early if they need additional support.

Recommendation: Future trials should ask each provider to nominate a lead person who is responsible for data sharing and can be the main point of contact for this. This person should ideally be an administrator rather than a tutor.

Learner awareness of the trial: Learners, especially those in the control group, were not always aware they were taking part in a trial. Control group learners should have been aware of their participation since their data were used and they were invited to take part in research activities. Additionally, participants' recall of both the trial and teaching

was poor when qualitative data collection took place after teaching had finished.

Recommendation: Future trials should provide standardised introductory materials for all providers and tutors to use, with check-in points to ensure that learners understand their participation, particularly for control groups who may have less direct engagement with trial activities

Timing and burden of data collection: Conducting learner interviews and endline surveys weeks or months after sessions ended often led to poor recall, with participants typically remembering only the final sessions clearly while earlier content was forgotten. The low completion rates for endline surveys highlight how research demands can overwhelm learners and reduce their willingness to participate.

Recommendation: Future trials should schedule data collection closer to intervention delivery to improve participant recall. Careful consideration should be given to whether the value of survey data justifies the burden placed on learners, particularly given the high non-compliance rates that limit the usefulness of the findings.

5.3. Considerations for future research

The trial demonstrated that RCTs can be successfully implemented within adult education settings. It also showed strong appetite in the adult education sector for participating in future research and trying new teaching approaches. Tutors in the treatment group found the Preparation for Maths GCSE sessions fitted well within their existing teaching commitments and curriculum delivery, allowing the intervention to integrate smoothly into existing GCSE Maths provision. While the trial experienced moderate attrition, low withdrawal rates once delivery began suggests that interventions delivered within the existing curriculum are feasible in this sector.

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Annex 1: Glossary

Adult education provider: An organisation that offers learning, training, and courses to adults aged 19 and over. These can include a wide range of institutions, such as Further Education (FE) colleges, local authority services, independent training providers (ITPs), and voluntary or community organisations.

Analysis sample: The final group of participants whose data is used to generate the final statistical results. It is often smaller than the initial sample due to exclusions (e.g. attrition, missing data, loss to follow-up).

Attrition: When participants leave a study before it is finished. This reduces the final sample size for analysis. This can occur when providers or learners withdraw, fail to complete assessments at the end of an intervention or submit required data. Attrition by trial arm looks at the attrition in the treatment and control groups separately. It is used to check for differential attrition (unequal loss between arms) that could bias comparisons.

Attrition rate: The percentage of participants or records lost between 2 points in a study (e.g., from baseline to endline).

Base size (base): The number of respondents that a particular statistic (e.g. a percentage or mean) is calculated from. In surveys, this is the number of responses.

Baseline: Data collected from participants at the start of a study, prior to any intervention. It serves as a benchmark for measuring change over time, checks that groups are balanced, and improves the precision of the final analysis.

Bias: A systematic error that can make research results misleading. Unlike random chance, this error does not disappear by simply increasing the number of participants in the study.

Binary variable: A type of variable that can only have 2 possible values, such as 'pass'/'fail' or 'yes'/'no', often coded as 1 or 0 in statistical analysis.

Blinded: The practice of withholding information about group assignment to prevent conscious or unconscious bias. This ensures that outcomes are not influenced by the placebo effect (participants changing behaviour because they know they are being treated) or observer bias (researchers interpreting data differently based on their expectations). When information is withheld, research is described as being ‘blind’.

Business as Usual (BAU): The standard set of conditions or practices that participants experience if they are not assigned to receive a new intervention. BAU does not mean doing nothing; it means continuing with the current approaches (e.g., the standard curriculum) rather than the new approach.

Complier Average Causal Effect (CACE): is a statistical estimate of the effect of an intervention specifically among those who complied with their assigned treatment condition. In this case, learners who attended at least 5 sessions and did not switch providers. Unlike the Intention-to-Treat (ITT) estimate, which measures the average effect across all participants regardless of whether they engaged with the intervention, CACE focuses only on compliers, typically producing a larger effect estimate. It is calculated using Instrumental Variable (IV) regression. CACE is useful for understanding the potential impact of an intervention under full engagement, but the estimate comes with a statistical penalty: it is based on a smaller, self-selected group, meaning the analysis is less powered to detect significant effects than the typical ITT analysis.

Computer Assisted Telephone Interviewing (CATI): A data collection method in which a researcher conducts a survey over the telephone while using a computer-based system to guide the interview and record responses.

Cluster Randomised Controlled Trial (RCT): A research method where groups of people (or “clusters”), rather than individuals, are randomly assigned to different trial arms.

Clustering: How individuals are naturally grouped together, such as learners within the same class or provider. Because people within the same cluster often share similar characteristics or experiences, statistical analysis must account for this to avoid drawing incorrect conclusions.

Coefficient (Standard error): In a regression analysis, the coefficient is the number that represents the size and direction of the relationship between a predictor variable and the outcome. The standard error is a measure of the statistical accuracy of that coefficient; a smaller standard error means a more precise estimate.

Cognitive skills: The core mental processes used to learn and apply maths, such as attention, working memory, recalling facts and procedures, understanding concepts, reasoning and problem-solving (e.g., choosing the right operation, following multi-step methods, interpreting graphs/tables).

Cohen’s d: A widely used statistical measure for calculating effect size, which shows the size of the difference between the averages (means) of 2 groups. A smaller number (e.g., around 0.2) indicates a small effect, meaning the difference between the 2 groups is minor. A larger number (e.g., 0.8 or higher) indicates a large effect, signifying a substantial and more meaningful difference between the groups.

Cohen’s h: This is a standardised measure of effect size used to compare 2 proportions (i.e., the difference between 2 percentages). It is useful for comparing results across different studies that might have different sample sizes or baseline rates. A small cohen’s

h (around 0.2) means a smaller difference between proportions. Even if the difference is statistically significant, it might not be very meaningful in a practical sense. A larger cohen's h (around 0.8) means a more substantial difference between proportions.

Compliance: The extent to which providers adhered to the trial requirements outlined in the Trial Readiness Packs, including data submission requirements and adherence to eligibility criteria.

Confidence intervals: Confidence intervals are used to express the certainty of an estimate. The interval is the range of values within which the 'true' value for the whole group is highly likely to lie. The smaller the range, the more certain the estimate. A 95% confidence level (the most common) means that if we repeated the study and analysis 100 times, 95 of the ranges calculated would include the true value of the population.

Contamination: A potential issue in a trial where the control group is unintentionally exposed to the intervention.

Continuing Professional Development (CPD): Ongoing learning activities for tutors/teachers to maintain and improve their professional knowledge and skills (for example, training, workshops, mentoring). Many adult education providers (e.g. FE colleges, training centres) require documented CPD for quality assurance and accreditation purposes.

Control group: A group that does not receive the intervention(s) being tested within an RCT design following randomisation. They are monitored alongside the group(s) receiving the intervention(s), and their results are compared to their treatment counterparts to understand what impact the intervention has had, compared to receiving no intervention. Any changes or effects detected within the control group over the course of the RCT can be interpreted as what would have happened normally.

Cooperation rate: A survey metric showing the proportion of contacted, eligible people who completed the survey. Typically calculated as completes divided by (completes + refusals + break-offs) among those reached and eligible.

Correlation: A correlation is a statistical measure that describes the strength and direction of an association between 2 or more variables. However, it is important to note that correlation does not imply causation, or how much such variables will change when a change is observed in the independent variable.

Covariates: Characteristics of participants (e.g., age, prior qualifications) that are measured at the beginning of a study and can be used in the statistical analysis to account for pre-existing differences between groups.

Effect sizes: A standard metric that quantifies the strength of a result. An effect size tells you not just if an intervention worked, but how much it worked, allowing for comparisons between different studies and contexts. Larger effect sizes indicate a stronger effect.

Endline survey: A survey completed at the end of an intervention period.

Entry level: Qualifications at entry level provide an introduction to education and can lead to certification of essential skills and knowledge for beginners.

ESOL learners: 'English for Speakers of Other Languages' learners; those taking part in a course for whom English is not their first language.

Experimental: An evaluation design where participants are deliberately assigned to groups, ideally through randomisation. By ensuring that there are no systematic differences between the treatment and control groups at the start (such as control groups and treatment groups formed by individuals with very different ages), this design provides the strongest possible evidence that the intervention caused any observed results.

Exploratory analysis: An early analysis of data to find initial patterns or interesting results. Findings from this stage are treated as suggestions that need to be tested properly in a future study, as they have a higher risk of being due to chance.

Feasibility: An assessment of whether a proposed study or intervention can be practically implemented given the available resources, time and logistical constraints. It focuses on practical considerations such as recruitment volumes and data collection processes.

Fidelity: The extent to which an intervention is delivered as intended. It assesses whether what was implemented aligns with the original design, ensuring that the results reflect the true intervention rather than a diluted or altered version.

Foundation Tier Maths GCSE: Maths GCSE entry for grades 1-5.

Functional Skills Qualification (FSQ) Level 1 in Maths: A qualification that focuses on practical mathematical skills needed for everyday life and work. FSQ Level 1 Maths is usually targeted at individuals who require a more applied or vocational approach to learning maths.

Guided learning hours: The amount of time a tutor is scheduled to be present to provide specific guidance to learners as part of a course of study.

Hedges' g: Hedges' g is a standardised measure of effect size that expresses the difference between 2 means in terms of standard deviations. It includes a small correction for bias in small samples, making it slightly more accurate when the sample

size is small. Around 0.2 is considered a smaller Hedge's g (a smaller difference between means), and 0.8 is considered a larger Hedge's g (a bigger difference between means).

Higher Tier Maths GCSE: Maths GCSE entry for grades 4-9.

Hypothesis: A clear, testable statement about what is expected to happen. In trials, it predicts the direction of an effect (e.g., that an intervention will improve outcomes).

Impact evaluation: A study designed to determine whether an intervention is the cause of an observed change. It works by comparing the outcomes of participants against a counterfactual – that is an estimate of what would have happened to those same participants had the intervention not taken place.

Impacts: The broader, long-term effects of an intervention on participants and their environment, such as improved employment prospects or sustained changes in teaching practices.

Implementation and Process Evaluation (IPE): A study designed to complement an impact evaluation by examining how the intervention was put into practice. While the impact evaluation measures outcomes, the IPE assesses factors like fidelity and participant engagement to explain why those results occurred.

Imputation: This is the statistical process of replacing missing data with substituted, plausible values.

Individualised Learner Record (ILR): A government dataset that Further Education (FE) providers in England are required to maintain, containing information about their learners and courses. It was used in the adult numeracy trials as a source of administrative data for outcomes such as grades, course completion and progression to further learning.

Instrumental Variable (IV) regression: A statistical method that estimates the effect of an intervention only on the people who actually took part in it. It is used to adjust the results when some people assigned to the treatment group did not participate.

Intention to treat (ITT): A statistical principle of randomised controlled trials where all participants are analysed in the specific group to which they were originally randomised. This applies regardless of whether individuals dropped out of the study or missed elements of the treatment. The purpose is to preserve randomisation which balances baseline characteristics and to eliminate attrition bias.

Interaction effects: When the effect of an intervention differs depending on another factor rather than the intervention itself (for example, the impact varies by delivery mode, provider, or learner characteristics). This is also referred to as moderation.

Intervention: In the context of a trial, an intervention refers to a specific programme, approach, or set of activities being tested for its effectiveness. It represents the treatment or change being implemented with participants, which is then compared against a control group or alternative approach to measure its impact on specified outcomes.

Intervention/ treatment arms: In a trial, the "arms" are the different groups to which participants are assigned. An "intervention arm" or “treatment arm” is any group that receives a specific treatment or intervention being tested.

Intraclass Correlation Coefficients: A 0–1 measure of how similar outcomes are within the same cluster (e.g., provider or class) compared with across clusters. Also known as intracluster correlation coefficients.

Key stage: A term used in the education system in England, Wales, and Northern Ireland to describe a specific stage of compulsory schooling, defined by a child's age. Key Stage 1 covers ages 5-7. Key Stage 2 covers ages 7-11. Key Stage 3 covers ages 11-14. Key Stage 4 covers ages 14-16 and concludes with national exams (GCSEs). Key Stage 5 covers ages 16-18.

Learner progress: A measure of the change in learner outcomes over the duration of a trial. It can involve tracking of development in areas such as academic performance, confidence, and study skills amongst both the treatment and control groups, enabling comparison of the relative progress of each.

Level 1: Qualifications at level 1 include or are equivalent to GCSE grades 3, 2 or 1 (previously D, E, F or G).

Level 2: Qualifications at level 2 include or are equivalent to GCSE grades 9, 8, 7, 6, 5, or 4 (previously A*, A, B, or C).

Likert Scale: An ordered rating scale used to measure attitudes or self-reports (e.g., strongly disagree to strongly agree, or 1 to 6). Often used for confidence or satisfaction questions.

Linear Regression: A statistical method used to estimate the relationship between an outcome variable (such as GCSE grade) and 1 or more predictor variables.

Local area: The collective term ‘Local areas’ covers the authorities that commission and coordinate Multiply programme delivery in their area. These are the Greater London Authority (GLA), Mayoral Strategic Authorities (MSAs) and upper tier and unitary local authorities outside of these areas.

Longitudinal: A type of research design that involves collecting data from the same subjects repeatedly over a period of time. This allows researchers to track changes, development, and long-term effects.

Lower bound/Upper bound: These are the lowest and highest values in a confidence interval.

Managed Service Supplier (MSS): The MSS led on the recruitment and management of providers and schools who took part in the course-based adult numeracy trials. They were responsible for contract management, monitoring and reporting of delivery and issuing payments. The MSS also facilitated tutor training for providers assigned to treatment groups.

Maths GCSE: An academic qualification typically taken by students in the UK around the age of 15-16, but which can also be taken by people of all ages. It is graded 1-9 with anything above grade 4 considered a pass. The GCSE serves as an important benchmark for further academic and professional pursuits, often required for entry into further education, vocational qualifications, or employment.

Meta-analyses: Studies that systematically combine and statistically pool results from multiple studies on the same question to produce an overall estimate of impact.

Meta-cognitive skills: The skills used to plan, monitor and evaluate one's own learning and problem-solving. Examples include setting goals, choosing and adapting strategies (e.g., drawing a diagram, estimating), checking understanding and progress while studying, managing time and effort, spotting and correcting errors, and reflecting on what to improve next.

Minimal detectable effect sizes (MDES): This is the smallest true effect (or impact) of an intervention that a study has a good chance (usually 80% probability) of detecting as statistically significant. It is calculated before a study is carried out (at the design stage) to determine whether the sample size is sufficient to find a meaningful result.

Multiple Imputation by Chained Equations (MICE): A statistical method that handles missing data by creating several different plausible datasets. By analysing these combined datasets, researchers can account for the uncertainty of the missing values, leading to more accurate standard errors and conclusions.

Outcomes: The specific, measurable results of an intervention that are tracked to evaluate its effectiveness, such as learner pass rates, attendance, and changes in confidence.

Outputs: The immediate, tangible products or services delivered by an intervention as a direct result of its activities. They describe 'what was done' or 'what was produced' rather

than the changes that resulted from it. For example, the number of learners who participated in a maths lesson.

Parameter: A numerical value that describes a characteristic of an entire population (e.g., the true average pass rate for all learners). In research, statistics from a sample are used to estimate these population parameters.

Pedagogy: The theory and practice of teaching and learning (for example, the methods, principles, and strategies used by tutors).

Percentage points (ppt): A percentage point is the unit for the absolute arithmetic difference of 2 percentages. For example, moving from 10% to 12% is an increase of 2 percentage points.

Pilot Randomised Controlled Trial (Pilot RCT): A small-scale randomised study to assess the practical application of an intervention and the validity of the research methods. It focuses on gathering evidence regarding feasibility, implementation, and acceptability, allowing researchers to refine the programme design and data collection tools based on real-world feedback.

Power calculations: Statistical calculations performed before an RCT begins to ensure the study has sufficient statistical power to detect a significant effect. The primary purpose of a power calculation is to ensure a study is sufficiently "powered", meaning it has a high probability of finding a real effect. The calculation requires researchers to specify the desired level of statistical power, the significance level, and the smallest effect size they consider to be meaningful.

p-value: The p-value, or probability value, is the probability that a result occurred by chance. A small p-value (usually 0.05 or less) suggests the result is 'statistically significant', meaning it is unlikely to be a coincidence.

Qualitative: Refers to non-numerical data that is descriptive in nature, such as interview transcripts, observations, and case studies. It focuses on understanding experiences and perspectives.

Quantitative: Refers to numerical data that can be measured and statistically analysed, such as test scores, pass rates, and survey ratings.

Randomisation: The process of assigning participants to treatment or control groups using a random mechanism (such as a computer algorithm). This ensures that every participant has an equal probability of assignment, creating groups that are statistically equivalent at the start of the study.

Randomised Controlled Trial (RCT): An evaluation design where participants are randomly assigned to either a treatment group or a control group. This process ensures the groups are statistically equivalent at the start, meaning that any difference in final outcomes can be confidently attributed to the intervention rather than external factors.

Readiness for trial: An assessment of whether an intervention is sufficiently well-developed and stable enough to meet the requirements of a trial, and whether the proposed research methods are feasible.

Recall bias: A systematic error that occurs when people are asked to remember past events or experiences and their memories are incomplete or inaccurate.

Regression model: A statistical tool used to model and analyse the relationship between a dependent variable (the outcome) and 1 or more independent variables (the predictors).

Robustness: Whether or not the main results of a study hold up when the methods or assumptions are slightly changed.

Semi-structured interview: A qualitative interview format that combines a pre-determined set of open-ended questions with the flexibility to explore new ideas. It ensures that key topics are covered for every participant, while still allowing the interviewer to probe deeper into interesting or unexpected answers.

Sensitivity analysis: A statistical method used to assess how the results of a study might change if key assumptions or population data were different.

Skewed: This describes a distribution of data that is not symmetrical. A distribution is "skewed" if the data points are not evenly distributed around the average. For example, a sample may be skewed towards having lower levels of qualifications if the sample contains more data entries with lower levels than higher ones.

Standard deviation: This is a measure of the amount of variation or dispersion in a set of values. A low standard deviation means that all values tend to be close to the average (mean), while a high standard deviation means that the values are spread out over a wider range.

Statistically powered: A term describing a study that has a large enough sample size to have a high probability (typically 80% or more) of detecting a real effect if 1 exists.

Statistically significant: A result is "statistically significant" if it is unlikely to have occurred by random chance alone. Researchers typically set a threshold to make this determination (p-value). It suggests there is a real effect or relationship in the data.

Stratification: The process of dividing a population into distinct subgroups or "strata" (e.g., by region) before randomisation to ensure that each subgroup is appropriately represented in the treatment and control arms.

Theory of Change: A model that explains how an intervention is expected to work. It maps the logical pathway from the inputs and activities to the intended short-term outcomes and long-term impacts.

TIDieR framework: TIDieR stands for the Template for Intervention Description and Replication. It is a 12-item checklist and guide designed to improve the completeness and quality of how research interventions are described in publications.

Treatment group: The group of participants randomly assigned to receive the specific programme or policy being tested. Their outcomes are compared against those of the control group to determine if the intervention caused a significant change.

Trial participant: An individual who meets the eligibility criteria, has provided informed consent, and has been formally enrolled or randomised into the study.

ULN: Unique Learner Number. A unique 10-digit number assigned to individuals over the age of 14 involved in education or training in the UK.

Variance: A specific statistical measurement that measures the spread of data points around their average value (the mean). A small variance means the data points are clustered tightly around the average, while a large variance indicates they are more widely scattered.

Annex 2: Intervention Description

Overview

The Preparation for Maths GCSE intervention provides 7 hours of study skills lessons embedded within adult GCSE Maths courses. Usual GCSE Maths tutors deliver the lessons to learners aged 19 and over during existing curriculum time. Whilst designed for face-to-face teaching, the lessons can be adapted for online or blended delivery. Learners who attend at least 5 of the 7 hours are considered to have completed the course.

Many adult GCSE Maths learners face similar challenges: they often feel underprepared for the demands of the course, are unsure what to expect, and must balance studying with work, caring and other responsibilities. The study skills sessions teach practical strategies within normal lesson time aimed at helping learners build confidence, stay engaged, complete their course and perform better in exams.

Design principles

The study skills sessions are designed to fit within existing GCSE lessons, requiring no extra attendance from learners. Tutors deliver them in a fixed sequence, with the first 5 taking place in the Autumn term and the final 2 before Easter.

The content covers growth mindset and mathematical resilience, study and revision skills, calculator and IT use and practical exam strategies. Each session includes practical methods learners can use straight away, such as ratio tables, order of operations on scientific calculators, study planning and exam pacing.

Each session comes with PowerPoint slides and tutor guidance notes to reduce preparation time. Tutors are required to deliver all the content but can make minor adjustments to fit their timetables or delivery methods (for example, adapting materials for online classes). The product developer and research team set boundaries for the trial to keep adjustments minimal and maintain consistency across providers.

Tutor training

Tutors allocated to the treatment arm were required to complete a 2-hour online training session led by Mathematics in Education (MEI), who developed the course. The training used the actual lesson materials and explained the rationale behind each session.

Intervention sessions

The following sections detail the objectives, activities and content of each of the 7 sessions that make up the Preparation for Maths GCSE course. They also include discussion of the rationale for each.

Session 1: Growth Mindset and Resilience

Objectives

The learning objectives for this session are:

- To get to know each other and recognise previous experiences.
- To categorise attitudes into fixed or growth mindsets.
- To recognise that progress is maximised in the growth zone.

In this session, learners reflect on their experiences of learning maths so far and are introduced to the concepts of fixed and growth mindsets. They learn about the growth zone model and how this can help them in maths lessons.

Rationale

Session 1 is included to build growth mindset and mathematical resilience from the outset because evidence shows that believing you can improve is strongly linked to gains in numeracy (National Numeracy, 2024). Action research in further education recommends teaching how the brain learns at the beginning of the year and reinforcing this throughout the programme (ETF, 2023). Adult learners told course designers they benefit from sharing past maths experiences and feeling they are “in it together.” This session creates a structured space for individual and group reflection and introduces growth mindset in an accessible way that can be reinforced throughout the year.

Session 2: Introduction to Maths GCSE

Objectives

The learning objectives for this session are:

- To become familiar with the topic areas covered in GCSE maths and the types of questions asked in exams.
- To use a ratio table to answer proportion questions.

Learners are introduced to the topic areas included in the GCSE Maths course, and the types of questions that could be asked in the exam. They learn how to use ratio tables and how they could help them solve different proportion questions.

Rationale

A survey of teachers conducted by MEI indicated that many adult learners begin GCSE Maths without the level of readiness teachers would hope for, with sixteen out of twenty-five respondents describing their learners as ‘not well prepared’. Interviews with learners similarly highlighted feelings of uncertainty about what to expect, often because they had been out of education for several years or had studied abroad. MEI’s wider research, drawing on a review of the existing evidence base (surveys of twenty-five adult-education teachers, and interviews with both teachers and adult learners who had recently completed GCSE Maths), also found that many learners saw limited value in researching the course content before enrolling, as their motivations tended to be practical, such as supporting children or achieving work-related goals (Alma Economics, 2023). Session 2 responds directly to these insights by introducing GCSE topics and question types early in an encouraging, accessible way, helping learners apply their developing growth-mindset approach straight away. The session focuses on ratio and proportion, using the ratio table as a practical and foundational method that is likely to be new to most learners.

Session 3: Study Skills

Objectives

The learning objectives for this session are:

- Understand how to take effective notes.
- Develop a study plan for outside of the classroom.

Session 3 builds on the previous work on proportion, with learners practising how to write clear notes using a worked example. The session makes it clear that learners should study for 3 hours each week outside of class. The session also helps them plan how to fit that into their schedules. Learners discover that mixing more than 1 topic per week makes their study time more effective.

Rationale

Teachers feel that many adult learners start GCSE maths underprepared for the study demands (Farrow, 2019) and face practical barriers such as limited time, finances, childcare, work and health (Kantar Public and Learning and Work Institute, 2018). Some also lack effective study habits, particularly those with weaker prior numeracy and qualifications. This session taught concrete study techniques designed specifically for maths (e.g., recording definitions and key vocabulary and using worked examples), using direct proportion as the example and building on what learners were already studying. This approach aligns with guidance issued by the Education Endowment Foundation (EEF, 2021). The session also makes it clear how much study time GCSE Maths

requires, introduces the concept of mixing topics when revising, and helps learners to plan their study schedule and choose suitable study spaces.

Session 4: Using your calculator

Objectives

The learning objectives for this session are:

- To become familiar with how your calculator works
- To understand the order of operations

The session taught learners what they need to know about calculator use for their GCSE. They explored how different calculators prioritise operations, which reinforced their understanding of the ‘order of operations’. Learners complete problem-solving activities on their calculators to build confidence using different functions.

Rationale

The Nuffield Foundation has found that learners need explicit teaching on calculator use so they can judge when and how to use one effectively (The Nuffield Foundation, 2018). This is crucial for GCSE Maths, where calculators are allowed for around two-thirds of the exam and can free up mental space for problem-solving. Adult learners told MEI that reluctance to purchase calculators is a result of cost, unfamiliar functions or anxiety, while MEI’s research with teachers revealed a perception that some adult learners believe using calculators is “cheating.” This session tackles these barriers by exploring order of operations with and without different calculators, and uses collaborative, reciprocal teaching to build confidence.

Session 5: Using IT effectively

Objectives

The learning objectives for this session were:

- To become familiar with college IT systems
- To identify how to use the internet to support study.

This session is designed to be flexible because each adult learning organisation has different IT systems and varied expectations for learner IT use. Using ‘factors and multiples’ as the example topic, learners compare different websites to learn how to find reliable online sources for their independent study.

Rationale

Adult education organisations now expect learners to work online more (e.g. uploading materials to virtual learning platforms), but blended learning works best when learners' IT skills and access are considered (Alma Economics, 2023). MEI's research with teachers highlighted a common view that adult learners can have a fixed mindset regarding IT which can be detrimental to their study outside the classroom. Equally, learners shared in interviews with MEI that it can be hard to know how to use the internet effectively to support their study. This session introduces learners to their learning organisation's specific systems and a small, curated set of GCSE Maths websites to reduce confusion and build confidence using online resources. The maths content covers factors and multiples, a straightforward topic that allows learners to concentrate on learning the digital tools.

Session 6: Revision techniques

Objectives

The learning objectives for this session are:

- To explore different revision strategies
- To develop a personal revision plan

Using a student-friendly version of their GCSE scheme of learning, learners use a traffic light system to rate topic areas, helping them choose an order for revising (starting with topics they knew well). They learn a revision technique called 'blurting' – writing down everything they could remember about a topic – and practise this using different topics. They also learn the 'Pomodoro technique' for managing study time in focused bursts.

Rationale

Revision is a core part of the intervention's hypothesis and overlaps with study skills, particularly for adults who are time-poor and juggling commitments. Adult learners interviewed by MEI could not explain how they decided what to revise, so this session teaches them to use traffic light ratings to prioritise topics (starting with green 'confident' topics and amber 'partially confident' ones), linking this to their Growth Mindset approach. The session also introduces "blurting" as a way to practise recall (which works well as a group activity) and the Pomodoro Technique to break study time into manageable chunks.

Session 7: Exam techniques

Objectives

The learning objectives for this session are:

- To explore different exam techniques
- To improve exam confidence

The session shows learners the dates and times of their exams and suggested an effective order for answering questions. Learners spend most of the session examining past papers and planning which questions to tackle first.

Rationale

“Previous experiences of education” has been identified as a significant part of adult students’ “capacity to overcome difficulties and to perceive themselves as a successful learner” (Kantar Public and Learning and Work Institute, 2018). There is limited evidence on how adults approach exam technique, and MEI’s research with adult learners found many reporting high anxiety, with the exam itself seen as the barrier between the learners and their next steps and a reminder of previous failure. This session uses a collaborative workshop to demystify exam papers and rehearse practical tactics without completing full solutions. The aim is to reduce anxiety, build shared strategies, and help learners gain more marks on the day.

Annex 3: Cost data

Providers that signed up to a Multiply Education Research Trial were eligible to receive funding based on the number of learners and the number of additional guided learning hours per trial.

Providers in the treatment group received an admin premium of 10% of the planned learner numbers (based on intervention costs) to support learner recruitment, submission of trial data, trial training and travel expenses. The funding for intervention costs included £7.20 per additional guided learning hour based on the number of these per trial and the recruited number of learners. Area cost and disadvantage cost uplifts were added as applicable. Providers also received a one-off payment of £1000 and tutors received free, high-quality training on how to implement the lessons.

In the control group, providers received a 10% premium of the planned learner numbers (based on intervention costs) to support learner recruitment and submission of trial data. The provider also receives a one-off payment of £1,000 pounds.

The grant funding spend for the Preparation for Maths GCSE, based on the notes above, was £54,180. The training cost was £1,200. This resulted in a total delivery spend of £55,380[66].

66 Figures rounded to the nearest £10

Annex 4: IPE questions and research tools

There were 14 headline questions to be addressed through the IPE. These are set out below along with accompanying sub-questions.

1. **Has the intervention been delivered with fidelity (that is, in line with the intervention guidance)?**

The purpose of this question is to explore some of the key assumptions identified in the Theory of Change, and support interpretation of the findings of the RCT by providing evidence on exactly what was delivered to learners who were part of the intervention group and the extent to which this reflects the intended intervention.

a. When (in the sequence of lessons/sessions) was the study skills content presented? How, if at all, did this vary between providers?

b. Do tutors present the study skills content consistently?

c. To what extent do tutors refer back to the study skills content throughout the year? How do they do this?

d. To what extent have tutors adapted the intervention materials? What adaptations were made and what were the reasons for this? Were any adaptations required due to the timing of course delivery (i.e. after the 42-day probation period)?

e. How feasible is it for tutors to implement the intervention as intended? Where this has not happened, what are the reasons for this?

2. **To what extent, if at all, does the "business as usual" GCSE course typically include any content relating to study skills?**

a. What types of study skills content (if any) are included in GCSE Maths courses? How far does this differ to the treatment in the pilot trial?

b. What (if any) study skills content do learners in the control group receive? What is their experience of this?

3. **Is there any evidence of contamination of the "business as usual" GCSE courses? If so, what are the causes of this?**

The purpose of these 2 questions is to support interpretation of the findings of the RCT, by providing evidence on what was delivered to learners who were part of the control group and the extent to which this differs from the intervention received by the treatment group.

a. How, if at all, are study skills covered in "business as usual" GCSE courses and how far does this vary between providers / courses?

b. To what extent do providers encourage tutors to share resources and lesson plans? If so, has this affected the pilot trial?

c. To what extent have tutors who have been trained to deliver the intervention covered any “business as usual” classes? If so, has this affected the pilot trial?

4. How did tutors experience delivering the intervention?

The purpose of this question is to gather evidence on some of the enablers and barriers to the intervention being effective, as identified in the Theory of Change workshop. This evidence will help inform future delivery of the intervention. This research question will also provide evidence about what outcomes, if any, the intervention has for tutors. It will also provide evidence on tutors’ experience of taking part in pilot trials that can be used to help design future trials in this sector.

a. To what extent did they understand the rationale behind the intervention? To what extent did they agree with this rationale?

b. How did tutors feel about being asked to deliver a new approach?

c. How did tutors feel about taking part in a pilot trial? In particular, how did tutors delivering the “business as usual” approach feel about this?

d. How easy or difficult was it to fit the content into the existing course hours without reducing the maths content? How do tutors feel about this?

e. How appropriate was the timing of the course delivery? Were there any implications of it being delivered after the 42-day probation period as opposed to at the start of the course?

f. What, if anything, do they feel they gained from the experience of delivering the intervention? How did these outcomes come about?

g. How, if at all, could the intervention be further developed or improved to enable wider roll out?

5. What is tutors’ experience of the training and support provided to deliver the intervention?

The purpose of this question is to gather evidence on the effectiveness of training, a key enabler for the intervention as identified in the Theory of Change workshop. This evidence will help inform future delivery of the intervention. This research question will also provide evidence about what outcomes, if any, the intervention has for tutors.

a. To what extent do they feel the training supported them to deliver the intervention effectively?

b. How useful were the resources provided (e.g. lesson plans)?

c. What worked well and less well about the training and resources? What could be improved?

d. What, if anything, did they gain from completing the training?

6. How is delivery of the intervention affected by turnover or absences among teaching staff?

The purpose of this question is to gather evidence on a significant potential barrier to the intervention being delivered as intended, as identified in the Theory of Change workshop. This evidence will help interpret the results of the RCT and inform future delivery of the intervention.

a. In particular, to what extent does this affect tutors' ability to refer back to the study skills content?

b. How are teaching staff absences managed / covered? To what extent has this created a risk of contamination between treatment and control groups?

c. What approaches have been/could be taken to mitigate these issues?

7. What is learners' experience of the intervention?

The purpose of this question is to gather evidence on the mechanisms behind the intervention and enablers and barriers to the intervention being effective, as identified in the Theory of Change workshop. This evidence will help inform future delivery of the intervention.

a. What motivated learners to take or retake a GCSE Maths course? What were they hoping to gain from this?

b. How engaged were learners with the study skills content?

c. Views on the timing of the study skills sessions within the GCSE course and if this felt right / appropriate? If not, why not and when would have been a better time?

d. How many of the study skills sessions did they typically attend?

e. How relevant did they feel the study skills sessions were for them?

f. How easy or difficult was it to put any new skills/abilities into practice?

g. How easy or difficult was it to maintain any new habits gained from the sessions?

h. What do learners think worked well about the sessions? What could be improved?

8. What outcomes does the intervention have for learners?

The purpose of this question is to gather evidence on the mechanisms behind the achievement of key outcomes, and about outcomes the intervention may have for learners which are not being measured as part of the RCT.

a. What, if anything, did learners feel they gained from the study skills sessions?
    i. Study skills to use throughout the course
    ii. Revision and exam techniques
    iii. Resilience
    iv. Understanding of growth mindset
b. How did the sessions make a difference to these outcomes?
c. What elements of the sessions were most useful/made the most difference?
d. What, if anything, did learners feel they gained from the course?
    i. Increased ability in maths
    ii. Increased confidence in maths
    iii. Ability to support children's learning
    iv. Ability to manage finances
    v. Outcomes relating to work/employment
e. To what extent do learner outcomes vary by individual characteristics?

9. What enablers are there to learner engagement and participation in the intervention?

The purpose of this question is to gather evidence on enablers to the intervention being effective, as identified in the Theory of Change workshop. This evidence will help inform future delivery of the intervention. Enablers could relate to:

a. Learning provider characteristics and actions
b. Tutor attitudes/actions
c. Course content
d. Course delivery (including timing of the intervention within the curriculum)

10. What barriers are there to learner engagement and participation in the intervention, and how can these be overcome?

The purpose of this question is to gather evidence on barriers to the intervention being effective, as identified in the Theory of Change workshop. This evidence will help inform future delivery of the intervention. The types of barriers to be explored include (but are not limited to):

a. Some learners not attending for the first few weeks of the course
b. Limited IT access

c. Digital literacy
d. Language barriers for ESOL students (intervention content may require greater proficiency in English than BAU course content)
e. Tutors not fully appreciating the needs of learners who struggle with maths
f. Other barriers

11. What level of GCSE exam papers were taught and administered to learners in treatment and control groups (foundation or higher)?

The aim of this question is to determine the scope of possible grades that learners in the treatment and control groups could have achieved. Foundation papers cover grades 5 to 1, whilst higher papers cover grades 9 to 4 (with a 'safety net' grade 3 for students scoring just below grade 4).

It would be useful to explore:

a. At what point the decision of which exam paper to administer to learners is made (e.g. before the course has started, during delivery or shortly before the final exam)?
b. What factors influence the decision of which level of exam paper to administer to learners?
c. To what extent is there variation in the levels of exam papers taught and administered within individual classes and / or providers?
d. To what extent do learners feel they were taught and administered the right level of exam paper?
e. Do all students always get put forward to sit an exam or are some discouraged from doing so, e.g. if they are considered not to be ready?

12. What criteria is used by providers in treatment and control groups to determine which learners to put forward for GCSE Maths exams?

We understand that some adult education providers only put forward learners to GCSE Maths exams who they expect to pass and / or achieve a certain grade, whilst others encourage all learners to sit the exam regardless of their expected attainment. It will be important for the trial to understand the different approaches taken by providers and how far this varies across both treatment and control groups.eKey areas for exploration will include:

a. At what stage in the academic year is a decision made as to which learners are put forward to sit the GCSE exam? What criteria is used to determine this decision?

b. Were all learners on the GCSE course (in both treatment and control groups) put forward for the exam? If now, what proportion were put forward? What were the reasons for any not put forward?

c. Were any learners put forward for the exam who might not otherwise have been in a usual year (outside of the pilot trial)? What were the reasons for this?

13. What lessons have been learned for future delivery of the intervention?

The purpose of this question is to identify and prioritise lessons learned relating to future delivery of the intervention.

a. What, if anything, should be updated or changed for future delivery?

14. What lessons can be learned from the pilot about delivering RCTs in adult education settings?

The purpose of this question is to identify lessons in relation to the feasibility and acceptability of delivering RCTs within adult education settings to inform the design and delivery of future RCTs in the sector. Key questions to be explored include:

a. What can be learned from the process of developing the intervention to be tested through the pilot? What measures were taken to ensure it was suitable for trial? What are the lessons?

b. What types of promotional activities and messaging worked well / less well to engage and recruit adult education providers to take part in the pilot trial? How / did this differ by different types of education providers?

c. What worked in converting adult learning organisations who expressed an interest in participating in the pilot trial to full sign up? What were the enablers / barriers to organisations signing up?

d. How far did adult education providers fully understand the randomisation process and were willing to accept the results of this?

e. To what extent were participants able to follow the study protocol? What were the enablers / barriers to adherence to this? What are the lessons?

f. How far were providers compliant with the data collection and sharing requirements associated with the trial? What were the enablers / barriers to effective data collection and sharing? What are the lessons?

g. Were the outcome measures used valid, reliable, acceptable and complete? How / in what ways could they be improved?

h. What were the reasons for any attrition from the pilot trial? How / did attrition vary between treatment and control groups and different types of learning organisations / learners?

IPE research framework

Table 20: Framework for the implementation and process evaluation

Research question	Source for this measure
1. Has the intervention been delivered with fidelity (that is, in line with the intervention guidance)?	Interviews with tutors Interviews with learners Learner survey Interviews with wider stakeholders
2. To what extent, if at all, does the "business as usual" GCSE course typically include any content relating to study skills? What is the learner experience of this?	Interviews with tutors Interviews with learners Learner survey
3. Is there any evidence of contamination of the "business as usual" GCSE courses? If so, what are the causes of this?	Interviews with tutors Interviews with learners Learner survey
4. How did tutors experience delivering the intervention?	Interviews with tutors
5. What is tutors' experience of the training and support provided to deliver the intervention?	Interviews with tutors Interviews with wider stakeholders
6. How is delivery of the intervention affected by turnover among teaching staff?	Interviews with tutors Interviews with learners Learner survey
7. What is learners' experience of the intervention?	Interviews with learners Learner survey Management information on learner attendance
8. What outcomes does the intervention have for learners?	Interviews with tutors Interviews with learners Learner survey

Research question	Source for this measure
9. What enablers are there to learner engagement and participation in the intervention?	Interviews with tutors Interviews with learners
10. What barriers are there to learner engagement and participation in the intervention, and how can these be overcome?	Interviews with tutors Interviews with learners
11. What level of GCSE exam papers were taught and administered to learners in treatment and control groups (foundation or higher)?	Interviews with tutors Interviews with learners
12. What criteria is used by providers in treatment and control groups to determine which learners to put forward for GCSE Maths exams?	Interviews with tutors Interviews with learners
13. What lessons have been learned for future delivery of the intervention?	Interviews with tutors Interviews with learners Learner survey Interviews with wider stakeholders
14. What lessons can be learned from the pilot about delivering RCTs in adult education settings?	Interviews with tutors Interviews with learners Learner survey Interviews with wider stakeholders

Source: Pilot Trial protocol

Topic guide – learner control

Introduction

This topic guide is to be used for interviews with learners who were in the control group for the Preparation for Maths GCSE Trial.

Questions in **bold** represent the headline questions to be asked within each section. The text in *italics* underneath the bold questions are suggested probes / potential areas for further exploration to capture more detail where required / time permits.

Priority questions within each section are highlighted in blue – these should be the focus where time is limited to ensure all sections are covered.

Interviewer preparation

A **comprehensive briefing** will be delivered to all interviewers in advance of fieldwork starting. The briefing will incorporate a detailed walk through of the topic guide, providing an opportunity for questions and discussion in relation to each element. It will also cover logistics relating to fieldwork start and end dates, allocation of interviews across the team and information on the approach to recruitment and scheduling.

In advance of fieldwork starting, please ensure you refresh your memory of the key aims and objectives of the **Implementation and Process Evaluation** strand of the Preparation for Maths GCSE trial by reading the relevant section of the Trial Protocol.

Purpose of interview

Thank you for agreeing to take part in an interview about your experience of your Maths GCSE course. I work for Ipsos (a research organisation). The Department for Education has appointed our research team to evaluate the effectiveness of different types of teaching methods used on adult Maths GCSE courses. The course that you took part in is included in this research.

As part of the evaluation, we are speaking to tutors who delivered the course, as well as learners who took part. Today's discussion will cover your experiences of the Maths GCSE course, as well as your experience of being part of the research. Your feedback will be used by the Department for Education to better understand how to support people on maths GCSE courses. It will also be used to inform how research like this should be delivered in future.

There are **no right or wrong answers**, we are just interested in hearing about your experiences. Everything discussed in the interview will only be used for this research. The interview is expected to last approximately **30-45 minutes**.

Consent

Participation in the interview is entirely voluntary, and you are free to change your mind and stop the interview at any time. If you need to, you can ask for a break at any point, and if

you feel uncomfortable answering any questions then please just let me know and we can move on.

The opinions and views you provide in the interview will be **used for the purpose of the research only**. The information you provide will be treated in the strictest confidence by the research team at Ipsos and the answers you provide will not be passed to the Department for Education in a way that will enable you to be identified. The final report of the research will be published, but you will not be named in the report or attributed to anything you have said in the interview.

In accordance with GDPR legislation, the interview documentation, recording and notes will be securely deleted by June 2026.

Do you have any questions for me before we begin? Are you happy to proceed with the interview?

We would like to record the discussion for analysis purposes. The recording will be used to ensure that we transcribe details correctly, it will not be provided to anyone outside of the evaluation team and will be destroyed by June 2026 after we have completed the evaluation.

Can I have your permission to audio record the interview?

[Obtain consent on audio recording]

Section A: Introduction and background (5mins)

a. **Can you introduce yourself, and tell me about your previous experiences, if any, with Maths/Maths courses?** *Probe for:*

    - *What is their current situation (e.g. employment, household, children, family)*
    - *Their (maths) education background, prior to the course (e.g. including any previous qualifications)*
- *Whether they have previously participated in GCSE Maths or other types of maths course, and their experience of this*
    - *Extent to which they have had informal exposure to Maths (e.g. through employment, children in school)*

a. **From your understanding, have you been put forward for/already sat a Maths GCSE exam this academic year (May/June 2025)?** *If necessary, probe for:*

    - *What, if any, criteria was used to determine whether you were put forward for the exam?*
    - *[If put forward for their Maths GCSE exam] Which level of exam paper will you be sitting / did you sit? (ie. Foundation or Higher)*

- *When was the decision of which paper you were going to sit decided and what was your involvement in that? How do you feel about that?* [probe on whether they feel it is the right level for them and why / why not]
-

Section B: Motivations to register for the course (10 mins)

a. What was the main reason you decided to take/retake a Maths GCSE course? *Probe on:*

1. Whether they need the qualification *for a specific purpose (e.g. for a job role or progression to further learning)*, or are looking to improve their Maths more generally
    - *Why they decided to register this academic year, and not before*
    - *When they registered, and how long they had been considering it for*
    - *What benefits they thought GCSE Maths would have for them in their everyday life*
    - *What benefits they thought GCSE Maths would have for their future education and employment opportunities*

As you may be aware, your education organisation is involved in research commissioned by the government (Department for Education) to trial new approaches to teaching Maths GCSE to adult learners. Your tutor may have explained what this means for you and how you are involved in the research. Research activities you may have taken part in include surveys and this interview.

What was your initial experience of being invited to take part in research as part of the GCSE Maths course? Why do you say that? *Probe on:*

- *How and when the research was first introduced to them*
- *Views on how clearly it was explained to them*
- *Whether they recall the information sheets / Trial-Readiness Packs that were provided and if they have any feedback on those*
- *Their understanding of the data and survey requirements for the research*
- *How far they understood they were part of research and knew where to go to ask questions about this*

a. **To what extent has your experience of participating in research been in line with your expectations? Why do you say that?** *Probe on:*

- *Whether they have felt informed and supported by tutors in relation to the research requirements*
- *Their experience of the surveys and communications relating to the research – what has worked well and anything that could have been improved*

Section C: Learner experience of course (10mins)

a. **Approximately how much of the Maths GCSE course have you been able to attend?** *Probe for feedback on:*

- *What lessons/content they missed (to their knowledge)*
- *[If unable to attend all of the course] Why were you unable to attend the whole course? What implications, if any, has this had on your experience of the course and preparation for the exam? What (if anything) could have been done differently to enable you to have attended more of the course?*

a. What has been your experience of the Maths GCSE course so far? *Probe for feedback on:*

- *Overall levels of satisfaction with the course*
- *Course content*
- *Teaching style / approach*
- *Learning environment – online / in-person, class size, profile of other learners*
- *Resources and materials provided*
- *Length and pace of the course*
- *Structure of the course*
- *Support and guidance available*
- *Any particular highlights / aspects for improvement*

a. Have you had a change in tutor(s) in this academic year? If so, how, if at all, has this impacted your experience of the Maths GCSE course?

Section D: Outcomes/Impacts of the Maths GCSE course (5 mins)

b. To what extent have you developed your study and revision skills through the Maths GCSE course? *Probe on:*

- *[If developed study and revision skills] How / in what ways were you able to develop your study and revision skills through the course? Did you receive any specific lessons, guidance or support with this? If so, what did they cover and how useful was this in preparing you for the exam?*
- *[If did not develop study and revision skills] Would you have liked to receive additional support to develop your study and revision skills ? Why / why not? If so, what type of support would have been most useful and when would you have liked to have received this?*

a. **To what extent do you/did you feel ready to sit the exam? *Why do you say that?*** *Probe on:*

- *What has contributed to you feeling more / less prepared for exam?*
- *What do you think could have helped you to feel (even) more prepared for the exam?*
- *[If not yet covered] Which level exam paper will you be sitting? (ie. Foundation or Higher) How was this decided?*

a. **How confident do you feel about using maths in your everyday life after completing the course?**

- *How / to what extent has this changed as a result of taking part in the course? [if changed] what contributed to this change?*
- *Do you have any examples of how you use maths in your everyday life and (if relevant) how this has changed?*

Section E: Lessons for future delivery (10 mins)

a. **How would you summarise your experience of the Maths GCSE Course?**

- *What aspects of the course could be improved, if at all? If so, how?*

b. **How would you summarise your experience of participating in this research, and the activities required for this?** *Probe on:*

- *What aspects of the research could be improved, if at all? If so, how?*

c. **This research and learnings from it will be used to inform future research in adult education settings. What feedback (if any) would you share based on your experience of being part of the research?** *Probe on:*

- *Anything about being part of research that you particularly liked and why?*
- *Anything that you didn't like about being part of research and why? Anything that could have been improved?*
- *How would you feel about participating in future research like this?*

a. **That's all the questions I have for you, do you have any questions or comments for me? Anything we haven't covered that you think might be useful for us to be aware of?**

Thank you and close / end recording

Topic guide – learner treatment

Introduction

This topic guide is to be used for interviews with learners who were in the treatment group for the Preparation for Maths GCSE Trial.

Questions in **bold** represent the headline questions to be asked within each section. The text in *italics* underneath the bold questions are suggested probes / potential areas for further exploration to capture more detail where required / time permits.

Priority questions within each section are highlighted in blue – these should be the focus where time is limited to ensure all sections are covered.

Interviewer preparation

A **comprehensive briefing** will be delivered to all interviewers in advance of fieldwork starting. The briefing will incorporate a detailed walk through of the topic guide, providing an opportunity for questions and discussion in relation to each element. It will also cover logistics relating to fieldwork start and end dates, allocation of interviews across the team and information on the approach to recruitment and scheduling.

In advance of fieldwork starting, please ensure you refresh your memory of the key aims and objectives of the **Implementation and Process Evaluation** strand of the Preparation for Maths GCSE trial by reading the relevant section of the Trial Protocol. Please also familiarise yourself with Preparation for Maths GCSE programme by reading the description of this in the Trial Protocol and reviewing the **seven lessons plans** covering:

1. Growth mindset and resilience
2. An introduction to GCSE maths
3. Study skills
4. Using IT
5. Using a calculator
6. Revision techniques
7. Exam techniques.

Introductory text

Purpose of interview

Thank you for agreeing to take part in an interview about your experience of your Maths GCSE course. I work for Ipsos (a research organisation). The Department for Education has appointed our research team to evaluate the effectiveness of different types of teaching methods used on adult Maths GCSE courses. The course that you took part in is included in this research.

As part of the research, we are speaking to tutors who delivered the course, as well as learners who took part. Today's discussion will cover your experiences of the Maths GCSE course, as well as your experience of being part of this research. Your feedback will be used by the Department for Education to better understand how to support people on maths GCSE courses. It will also be used to inform how research like this should be delivered in future.

There are **no right or wrong answers**, we are just interested in hearing about your experiences. Everything discussed in the interview will only be used for this research.

The interview is expected to last approximately **45 minutes**.

Consent

Participation in the interview is entirely voluntary, and you are free to change your mind and stop the interview at any time. If you need to, you can ask for a break at any point, and if you feel uncomfortable answering any questions then please just let me know and we can move on.

The opinions and views you provide in the interview will be **used for the purpose of the evaluation only**. The information you provide will be treated in the strictest confidence by the research team at Ipsos and the answers you provide will not be passed to the Department for Education in a way that will enable you to be identified. The final report of the research will be published, but you will not be named in the report or attributed to anything you have said in the interview.

In accordance with GDPR legislation, the interview documentation, recording and notes will be securely deleted by June 2026.

Do you have any questions for me before we begin? Are you happy to proceed with the interview?

We would like to record the discussion for analysis purposes. The recording will be used to ensure that we transcribe details correctly, it will not be provided to anyone outside of the research team and will be destroyed by June 2026 after we have completed the research.

Can I have your permission to audio record the interview?

[Obtain consent on audio recording]

Section A: Introduction and background (5mins)

b. Can you introduce yourself, and tell me about your previous experiences, if any, with Maths/Maths courses? *Probe for:*

- *What is their current situation (e.g. employment, household, children, family)*
- *Their (maths) education background, prior to the course (e.g. including any previous qualifications)*

- *Whether they have previously participated in GCSE Maths or other types of maths course, and their experience of this*
  - *Extent to which they have had informal exposure to Maths (e.g. through employment, children in school)*

a. From your understanding, have you been put forward for/already sat a Maths GCSE exam this academic year (May/June 2025)? *If necessary, probe for:*

- What, if any, criteria was used to determine *whether you were put forward for the exam?*
- *[If put forward for their Maths GCSE exam] Which level exam paper will you be sitting/ did you sit? (ie. Foundation or Higher)*
- *When was the decision of which paper you were going to sit decided and what was your involvement in that? How do you feel about that? [probe on whether they feel it is the right level for them and why / why not]*

Section B: Motivations to register for the course (10mins)

a. What was the main reason you decided to take/retake a Maths GCSE course? *Probe on:*

2. Whether they need the qualification *for a specific purpose (e.g. for a job role or progression to further learning)*, or are looking to improve their Maths more generally
   - *Why they decided to register this academic year, and not before*
   - *When they registered, and how long they had been considering it for*
   - *What benefits they thought GCSE Maths would have for them in their everyday life*
   - *What benefits they thought GCSE Maths would have for their future education and employment opportunities*

As you may be aware, your education organisation is involved in research commissioned by the government (Department for Education) to trial new approaches to teaching Maths GCSE to adult learners. Your tutor may have explained what this means for you and how you are involved in the research. Research activities you may have taken part in include surveys and this interview.

What was your initial experience of being invited to take part research as part of the GCSE Maths course? Why do you say that? *Probe on:*

- *How and when the research was first introduced to them*
- *Views on how clearly it was explained to them*
  - *Whether they recall the information sheets / Trial-Readiness Packs that were provided and if they have any feedback on those*
  - *Their understanding of the data and survey requirements for the research*

- *How far they understood they were part of research and knew where to go to ask questions about this*

a. **To what extent has your experience of participating in this research been in line with your expectations? Why do you say that?** *Probe on:*

- *Whether they have felt informed and supported by tutors, in relation to the research requirements*
- *Their experience of the surveys and communications relating to the research – what has worked well and anything that could have been improved*

Section C: Learner experience of and engagement in course delivery (10mins)

As part of your Maths GCSE course, your tutor delivered a series of sessions designed to help prepare you to meet the requirements of the Maths GCSE course. These sessions covered the following topics:

- Growth mindset and resilience: In the session you may have discussed your maths journey so far and the Growth Zone.
- Introduction to GCSE maths: In the session you may have discussed GCSE Maths topics and ratio tables.
- Study skills: In the session you may have discussed direct proportion and how to study outside of lessons.
- Using a calculator: In the session you may have discussed true or false questions about calculators and order of operations.
- Using IT effectively: In the session you may have discussed college IT systems and using the internet for maths practice.
- Revision techniques: In the session you may have discussed the blurting and pomodoro techniques. The blurting technique involved writing everything you know about a topic on a sheet of paper without using notes. The pomodoro technique is a time management tool where you set a timer for 25 minutes, work with full concentration for that time, and then have a 5 minute break and repeat.
- Exam techniques: In the session you may have discussed how to approach the exam questions and tips for in the exam.

The following questions ask about your recall and experience of these seven sessions - we will refer to them collectively as ‘study skills sessions’ from now on.

a. **From your recollection, how many (of the seven) study skills sessions were delivered by your Maths tutor? Of these, how many did you attend?** *Probe for feedback on:*

- *What sessions they attended/What sessions they missed*
- *[If unable to attend all sessions] Why were you unable to attend all the sessions? What implications, if any, did this have on you? Is there anything that could have been done to enable you to attend all seven sessions?*

a. What was your experience of the study skills sessions that you attended? *Probe on:*

- *How did you find the study skills content? To what extent did you feel engaged with the content? Why do you say that?*
  - *How did you find the teaching approach?*
  - *Were the sessions delivered in person or online? (if in person, where did they take place?)*
  - *What resources and materials were provided during the sessions?*
  - *Timings of the sessions, in line with the GCSE Maths course, and if/how they could be improved*
  - *How / to what extent did your tutor offer support and guidance during these sessions? E.g. explained anything you did not understand further?*
  - *Were there any sessions that were particularly engaging/unengaging? Why was this?*
  - *What do you think could make the sessions more engaging for your learning? Why do you say that?*

a. **How relevant and/or useful was the content of the study skills sessions in supporting you through the GCSE Maths course and in preparing you to sit the exams?** *Probe on:*

- *How easy or difficult has it been to put any new skills / learning into practice? Why/why not?*

a. Have you had a change in tutor(s) in this academic year? If so, how, if at all, has this impacted your experience of the Maths GCSE course?

Section D: Outcomes/Impacts of the Preparation for Maths GCSE course (10mins)

b. To what extent do you feel you have developed your study and revision skills through participation in the Maths GCSE course? *Probe on:*

- *[If developed study and revision skills] How / in what ways were you able to develop your study and revision skills through the course? What was the role /contribution of the seven study sessions in developing these skills? Did any other elements of the course contribute to this?*
- *[If did not develop study and revision skills] Would you have liked to receive additional support to develop your study and revision skills? Why / why not? If so, what type of support would have been most useful and when would you have liked to have received this?*

a. **To what extent do you/did you feel ready to sit the exam? *Why do you say that?*** *Probe on:*

- *What has contributed to you feeling more / less prepared for exam?*
- *What do you think could have helped you to feel (even) more prepared for the exam?*
- *[If not yet covered] Which level exam paper will you be sitting? (ie. Foundation or Higher) How was this decided?*

a. How confident do you feel about using maths in your everyday life now that you have completed the course?

- *How / to what extent has this changed as a result of taking part in the course? [if changed] what contributed to this change?*
- *Do you have any examples of how you use maths in your everyday life and (if relevant) how this has changed?*

a. To what extent do you think the study sessions have impacted you, either positively or negatively? Why is this? *Probe for:*

- *What do you think you have learned / gained from the study skill sessions?*

a. **To what extent, if at all, do you think the study sessions specifically supported with your preparation for the GCSE Maths exam? Why is this?** *Probe on:*

- *To what extent they had an impact on: Study skills, Revision and exam techniques, Resilience, Understanding of growth mindset, Using IT, Using a calculator, and Familiarity of the GCSE maths exam?*
- *To what extent do you think the sessions will have an impact on: Your everyday life, Your confidence and maths skills, Supporting your children's learning, Future employment opportunities?*
- *To what extent did your attendance and/or engagement in the sessions influence the impact?*

As a reminder, the seven skills sessions included: Growth mindset and resilience, introduction to GCSE maths, study skills, using a calculator, using IT effectively, revision techniques and exam techniques…

b. **Which sessions, if any, were particularly effective in supporting your learning? Which sessions, if any, were less effective for supporting your learning? Why was this?** *Probe for:*

- *What, if any, sessions could be improved for next time? If so, how?*

Section E: Lessons for future delivery (10 mins)

c. **How would you summarise your experience**

d. **of the Maths GCSE Course?**

- *What aspects of the course could be improved, if at all? If so, how?*

e. **How would you summarise your experience of the seven study skills sessions?**

- *What aspects of the sessions could be improved, if at all? If so, how?*

f. **How would you summarise your experience of participating in research, and the activities required for this?** *Probe on:*

- *What aspects of the research could be improved, if at all? If so, how?*

g. **This research and learnings from it will be used to inform future research in adult education settings. What feedback (if any) would you share based on your experience of being part of the research?** *Probe on:*

- *Anything about being part of research that you particularly liked and why?*
- *Anything that you didn't like about being part of research and why? Anything that could have been improved?*
- *How would you feel about participating in future research like this?*

h. **That's all the questions I have for you, do you have any questions or comments for me? Anything we haven't covered that you think might be useful for us to be aware of?**

Thank you and close / end recording

Topic guide – tutor treatment wave 1

Introduction

This topic guide is to be used for the first wave of depth interviews with tutors in the treatment group for the Preparation for Maths GCSE Trial.

Questions in **bold** represent the headline questions to be asked within each section. The text in *italics* underneath the bold questions represent suggested probes / potential areas for further exploration to capture more detail where required / time permits.

Priority questions within each section are highlighted in blue – these should be the focus where time is limited to ensure all sections are covered.

Interviewer preparation

A **comprehensive briefing** will be delivered to all interviewers in advance of fieldwork starting. The briefing will incorporate a detailed walk through of the topic guide, providing an opportunity for questions and discussion in relation to each element. It will also cover logistics relating to fieldwork start and end dates, allocation of interviews across the team and information on the approach to recruitment and scheduling.

In advance of fieldwork starting, please ensure you refresh your memory of the key aims and objectives of the **Implementation and Process Evaluation** strand of the Preparation for Maths GCSE trial by reading the relevant section of the Trial Protocol. Please also familiarise yourself with Preparation for Maths GCSE programme by reading the description of this in the Trial Protocol and reviewing the **seven lessons plans** covering:

1. Growth mindset and resilience
2. An introduction to GCSE maths
3. Study skills
4. Using IT
5. Using a calculator
6. Revision techniques
7. Exam techniques.

Finally, please check the current **RAG rating** of the provider based on whether they have 1) participated in the mandatory training for the trial, 2) attended an Autumn KIT call / QA visit with Etio and 3) submitted their learner data to the secure Ipsos Data Portal.

Introductory text

Purpose of interview

Thank you for agreeing to take part in an interview about your experience so far of being part of the Preparation for Maths GCSE Multiply Education Research Trial.

I work for Ipsos UK (a research organisation). The Department for Education has appointed us, along with our consortium partners, to deliver the programme of Multiply Education Research Trials. As part of this, we are interviewing all tutors in the treatment group for the Preparation for Maths GCSE trial. The aim of these discussions is to capture tutors' experiences of engagement and participation in the trial so far. This includes your views and experiences of the training and support provided to enable you to deliver the Preparation for Maths GCSE sessions, how delivery is going so far, and learner engagement / participation in the sessions. We will also discuss what you have planned for the remainder of the course and your feedback on the data and evaluation requirements associated with the trial.

Your feedback will be valuable in informing our understanding of the effectiveness of the processes involved in delivering the Preparation for Maths GCSE course and how / in what ways it may or may not be resulting in the intended outcomes for learners. It will also be useful in developing our understanding of what works in enabling / supporting adult education organisations and tutors to take part in research trials.

There are **no right or wrong answers**, we are just interested in hearing about your experiences.

The interview is expected to last approximately **45 minutes**.

Consent

Participation in the interview is entirely voluntary, and you are free to change your mind and stop the interview at any time. If you need to, you can ask for a break at any point, and if you feel uncomfortable answering any questions then please just let me know and we can move on.

The opinions and views you provide in the interview will be **used for the purpose of evaluating the trial only**. The information you provide will be treated in the strictest confidence by the research team at Ipsos and the answers you provide will not be passed to the Department for Education in a way that will enable you to be identified. The final report of the trial will be published, but you and your organisation will not be named in the report or attributed to anything you have said in the interview.

In accordance with GDPR legislation, the interview documentation, recording and notes will be securely deleted two months after project completion and client sign-off of all reporting outputs and milestones, which we expect to be in May/June 2026.

Do you have any questions for me before we begin? Are you happy to proceed with the interview?

We would like to record the discussion for analysis purposes. The recording will be used to ensure that we transcribe details correctly, it will not be provided to anyone outside of the evaluation team and will be destroyed three months after we have completed the evaluation.

Can I have your permission to audio record the interview?

[Obtain consent on audio recording]

Section A: Introduction and overview of institution / learners (5mins)

i. **Can you tell me a bit about your current role and teaching background?** *Probe for:*

- *Formal teaching qualifications*
- *Length of experience teaching maths / adult maths*
- *Previous experience of teaching study / revision skills*
- *Any other types of courses / learning they currently deliver including in other organisations / institutions*
- *Any other non-teaching roles they hold (e.g. in relation to curriculum development, management, data, research / evaluation)*

a. **Can you describe the size and structure of your adult maths / numeracy department?** *Probe for:*

- *Numbers of tutors*
- *Numbers of classes / students*
- *Range of courses offered by type / level / qualification*

a. **Can you briefly describe the typical backgrounds and needs of your adult maths / numeracy learners?** *If necessary, probe for:*

- *Age / gender*
- *Whether English is a first language*
- *Prevalence of health issues / disabilities*
- *Previous qualifications*
- *Confidence in maths*
- *Barriers to learning*
- *Employment status*

a. **Have you or your organisation / department previously taken part in this type of research / evaluation including any trials? Can you tell me more about that?** *Probe for:*

- *Levels of organisational commitment to research / evidence-based practice*

- *How / if previous research or evaluation has been used to inform policy and practice*
- *Alignment of the research trial to strategic priorities of organisation*

Section B: Initial engagement and participation in the Preparation for Maths GCSE trial (10mins)

a. **How and when did you first hear about the Preparation for Maths GCSE trial? How did you find those initial communications?** *Probe on:*

- *Where / who did the information come from and what did it say?*
- *How clear were the initial communications you received about the trial, including the requirements of organisations / tutors taking part? Why do you say that?*
- *Were you involved in any discussions / decisions about whether your organisation would sign up to the trial?*

a. **How did your organisation determine which tutors, and which classes / learners, would be taking part in the Preparation for Maths GCSE trial?**

- *How many tutors / classes / learners are taking part in the trial?*
- *What proportion of all your Maths GCSE tutors / classes / learners does this cover?*
- *If only some Maths GCSE tutors / classes / learners have been included, how was this decided? What factors were considered?*

a. **How do you feel about being part of the Preparation for Maths GCSE trial?** *Probe for:*

- *What were your initial motivations for taking part? What were / are you hoping to get out of it?*
- *To what extent is being part of the trial meeting your expectations? Why do you say that?*
- *How / to what extend do you think your views / experiences of the trial would have been different had you been assigned to the control group? [Interviewer note: If further clarification needed, explain that providers / tutors in the control group do not deliver the Preparation for Maths GCSE sessions and instead delivers BAU Maths GCSE courses, although still have to share learner data with Ipsos and distribute learner surveys.]*

a. **How clear and useful have the communications been about your role and responsibilities in supporting delivery of the trial? Why do you say that?**

[Interviewer note: Tutor responsibilities include attending a 2hr training session delivered by MEI (who developed the Preparation for Maths GCSE course) in summer 2024; Sharing information with learners about the trial and providing them with an opportunity to opt-out; Administering surveys to learners; and Delivering the seven Prep for Maths GCSE sessions. They may also have been responsible for collecting and sharing learner data with Ipsos via the secure online portal.]

Probe for feedback on:

- *Trial-readiness packs – for organisations, tutors and learners*
- *Communications relating to the data and evaluation requirements of the trial, including administering learner surveys and the transfer of learner data to Ipsos via the portal (if relevant to them)*
- *What has worked well / less well and why in the communications and information you have received? How / could this have been improved?*

Section C: Experience of tutor training and support (10mins)

[Note to interviewer: All tutors were required to attend a 2hr online training session delivered by MEI (who developed the Preparation for Maths GCSE course) during summer 2024. They were also provided with lesson plans and accompanying guidance and materials to support delivery of the course.]

a. **What was your experience of the training that was made available to you to deliver the Preparation for Maths GCSE course? What do you think worked well / less well and why about the training?** *Probe for feedback on:*

- *Format – online vs in-person*
- *Length of session (2hrs)*
- *Timing relative to when the course started (summer 2024)*
- *Relevance of the content including level of detail*
- *Quality of delivery*
- *Opportunity to ask questions*
- *Whether they would have liked a follow-up session or sessions during delivery rather than a single / one-off training*

a. To what extent do you feel the training adequately prepared you to deliver the Preparation for Maths GCSE course? Why do you say that? *Probe on:*

- *Were there any aspects of the training that you would highlight as being particularly good / helpful in your preparation to deliver the course? Why do you say that?*
- *Were there any aspects of the training that were less useful? Why do you say that?*
- *Was there anything missing from the training that would have been beneficial to know ahead of delivery of the course?*

a. How useful were the resources and support available to enable you to deliver the Preparation for GCSE course, including the lesson plans? Why do you say that? *Probe on:*

- *How useful and clear are the lessons plans? Have any been more / less useful than others?*
- *What do you like about the lesson plans and why?*

- *Are there any aspects of the lesson plans / accompanying materials that you think could be further developed / improved?*

a. Have you shared any of the Preparation for Maths GCSE resources and materials with any other tutors within / out with your organisation?

- *If so, who have you shared them with and why? For example, have you shared with other tutors within your organisation or more widely / externally?*
- *How have they been shared – e.g. online / email / in community of practice sessions?*
- *Were you encouraged to share these resources?*

a. How well supported do you feel to deliver the Preparation for Maths GCSE course? Why do you say that? *Probe on:*

- *Do you feel that you have everything you need to deliver the course effectively? Why do you say that?*
- *Would you know where to go if you had any questions about delivery?*
- *Have you had to ask any questions about delivery? Who did you ask and how satisfied were you with the response?*
- *Is there anything missing in the support available that you would have welcomed?*

Section D: Delivery of the Preparation for Maths GCSE course (10mins)

[Note to interviewer: tutors should have delivered the first five Preparation for GCSE sessions after the 42-day probation period at the start of the 2024/25 academic year but still within the Autumn term. The final two sessions are expected to be delivered before Easter 2025.]

a. Can you confirm how much of the Preparation for Maths GCSE course you have delivered so far and when? *Probe for:*

- *Reasons behind any variations to intended delivery timings / sequencing*
- *Whether they were delivered in one block or over the course of several weeks*
- *Whether all sessions delivered so far were full or partially delivered and reasons for any that were not fully delivered*

a. **What is your understanding of the purpose for the Preparation for Maths GCSE course and the individual sessions that make up the course? To what extent do you agree with this rationale?**

- *Do you think your adult maths / numeracy learners require additional support for study / revision skills? Why do you say that?*
- *Do you think providing additional support for study / revision skills will make a different to learner outcomes (course completion and grades)? Why do you think that?*

a. How / in what ways does the Preparation for Maths GCSE course differ from your usual practice? How do you feel about being asked to deliver a new approach? *Probe for:*

- *Would you normally explicitly teach study and revision skills as part of adult maths GCSE courses? If so, what format does this teaching usually take? When is it typically delivered and how much time is dedicated to it?*
- *Have you had to make any adaptations to the Maths GCSE curriculum to fit the Prep for GCSE sessions within existing course hours? How do you feel about this? What impact has it had on you / learners?*

a. **Thinking of the sessions you have delivered so far, how well or otherwise have these gone?** *Probe on:*

- *How easy / difficult it has been to integrate the Preparation for Maths GCSE sessions within the curriculum*
- *Whether they were able to cover all the material in the time available*
- *How closely they adhered to the session plans and reasons for any adaptations / variations made in delivery*
- *Views on the timings of the sessions and whether these were appropriate*

a. How / to what extend have you been referring back to the study skills content throughout delivery of the Maths GCSE course? Why / why not?

b. How/ to what extent has delivery of the Preparation for Maths GCSE course been impacted by staff turnover or absence in your organisation?

- *Have any of the sessions not been delivered due to tutor turnover / absence?*
- *Have any of the sessions been delivered by other tutors? If so, did they attend the training or catch up on the recording afterwards?*
- *Do you anticipate this being an issue for delivery of the remainder of the course?*

a. What level of maths GCSE is being taught and administered to learners in the trial (foundation or higher)? *Probe on:*

- *What factors influence the decision whether learners sit the Foundation or Higher exam paper?*
- *At what point the decision of which exam paper learners will sit is made (e.g. before the course has started, during delivery or shortly before the final exam)?*
- *What is the proportion of learners taking part in the trial that are taught and put forward for the Foundation paper, compared with the Higher paper?*
    - *Will all learners taking part in the trial be put forward to sit an exam or will some be discouraged from doing so, e.g. if they are considered not to be ready?*
    - *How / does this differ for trial participants compared to usual practice?*

Learner experience, participation and outcomes (5mins)

b. How engaged have your learners been in the Preparation for Maths GCSE sessions that you have delivered so far? *Probe on:*

- *Learner attendance at the sessions, and How (if at all) this compares to attendance on the business as usual Maths GCSE course*
- *How engaged learners have been in the individual sessions*
- *Any aspects of the sessions delivered so far that have been more / less engaging for learners and why*
- *Enablers / barriers to learner engagement and participation in the sessions*

a. What (if anything) do you think your learners have gained so far from taking part in the Preparation for Maths GCSE sessions? What is this view based on (your own observations and / or direct feedback from learners)?

- *Study skills to use throughout the course*
- *Revision and exam techniques*
- *Resilience*
- *Understanding of growth mindset*

a. **Which of the Preparation for Maths GCSE sessions that have been delivered so far do you think have been or will be most/least useful in improving learner outcomes and why?**

1. *Growth mindset and resilience*
2. *An introduction to GCSE maths*
3. *Study skills*
4. *Using IT*
5. *Using a calculator*

[Interviewer Note: Providers should have delivered the first five sessions (listed above) and so the discussion should focus on these. The final two sessions are intended to be delivered later (before Easter) and will cover 6. Revision techniques and 7. Exam techniques. However, some may have delivered sessions 6 and 7 early and, if so, please ask about them too.]

15. Do you think there are any groups of learners for which the Preparation for Maths GCSE course and study skill strategies are more/less useful for? Why do you think this?

Section E: Experience of the trial and lessons for future delivery (5mins)

a. What (if anything) do you feel you have learned or gained from delivering the Preparation for Maths GCSE sessions so far? What (if anything) do you feel

you have learned or gained from taking part in the research trial more generally?

b. How would you feel about participating in future research or trials like this? Why do you say that?

- *Whether they would be happy to take part in future and reasons why*
- *Whether anything would need to change to encourage them to take part in future*

a. Do you have any thoughts / recommendations as to what could be done to encourage adult education organisations and tutors to take part in future trials like this? *Probe on factors relating to:*

- *Engagement and communications*
- *Timings for preparation / delivery*
- *Training and support provided*
- *Data and evaluation requirements*

a. That's all the questions I have for you, do you have any questions or comments for me? Anything we haven't covered that you think might be useful for us to be aware of?

b. Would you be happy to be recontacted to take part in a short follow-up interview towards the end of the Maths GCSE course? If so, when would be a good time for you?

c. Would you be happy for a member of the evaluation team to attend and observe one of the remaining two Preparation for Maths GCSE sessions?

- *If so, where / when will these be delivered?*
- *How many learners do you anticipate will attend?*

Note to interviewer: Please collect as much detail as possible on the final two sessions to help determine whether an observation will be possible.

Thank you and close / end recording

Topic Guide – Tutor Control Wave 2

Introduction

This topic guide is to be used for the depth interviews with tutors in the control group for the Preparation for Maths GCSE Trial.

Questions in **bold** represent the headline questions to be asked within each section. The text in *italics* underneath the bold questions represent suggested probes / potential areas for further exploration to capture more detail where required / time permits.

Priority questions within each section are highlighted in blue – these should be the focus where time is limited to ensure all sections are covered.

Interviewer preparation

A **comprehensive briefing** will be delivered to all interviewers in advance of fieldwork starting. The briefing will incorporate a detailed walk through of the topic guide, providing an opportunity for questions and discussion in relation to each element. It will also cover logistics relating to fieldwork start and end dates, allocation of interviews across the team and information on the approach to recruitment and scheduling.

In advance of fieldwork starting, please ensure you refresh your memory of the key aims and objectives of the **Implementation and Process Evaluation** strand of the Preparation for Maths GCSE trial by reading the relevant section of the Trial Protocol. Please also check the current **RAG rating** of the provider based on whether they have 1) participated in the mandatory training for the trial, 2) attended an Autumn KIT call / QA visit with Etio and 3) submitted their learner data to the secure Ipsos Data Portal.

Introductory text

Purpose of interview

Thank you for agreeing to take part in an interview about your experience so far of being part of the Preparation for Maths GCSE Multiply Education Research Trial.

I work for Ipsos UK (a research organisation). The Department for Education has appointed us, along with our consortium partners, to deliver the programme of Multiply Education Research Trials. As part of this, we are interviewing all tutors in the control group for the Preparation for Maths GCSE trial. The aim of these discussions is to capture tutors' experiences of engagement and participation in the trial. This includes your views and experiences of the information and support provided to you during the trial, and to better understand what delivery of 'business as usual' GCSE Maths looks like for learners and tutors.

Your feedback will be valuable in informing our understanding of what works in enabling / supporting adult education organisations and tutors to take part in research trials.

There are **no right or wrong answers**, we are just interested in hearing about your experiences.

The interview is expected to last approximately **30-45 minutes**.

Consent

Participation in the interview is entirely voluntary, and you are free to change your mind and stop the interview at any time. If you need to, you can ask for a break at any point, and if

you feel uncomfortable answering any questions then please just let me know and we can move on.

The opinions and views you provide in the interview will be **used for the purpose of evaluating the trial only**. The information you provide will be treated in the strictest confidence by the research team at Ipsos and the answers you provide will not be passed to the Department for Education in a way that will enable you to be identified. The final report of the trial will be published, but you and your organisation will not be named in the report or attributed to anything you have said in the interview.

In accordance with GDPR legislation, the interview documentation, recording and notes will be securely deleted two months after project completion and client sign-off of all reporting outputs and milestones, which we expect to be in May/June 2026.

Do you have any questions for me before we begin? Are you happy to proceed with the interview?

We would like to record the discussion for analysis purposes. The recording will be used to ensure that we transcribe details correctly, it will not be provided to anyone outside of the evaluation team and will be destroyed three months after we have completed the evaluation.

Can I have your permission to audio record the interview?

[Obtain consent on audio recording]

Section A: Introduction and overview of institution / learners (5 mins)

To begin, please can you introduce yourself? Can you tell me a bit about your current role and teaching background? *If not previously covered, probe for:*
- *Formal teaching qualifications*
- *Length of experience teaching maths / adult maths*
- *Previous experience of teaching study / revision skills*
- *Any other types of courses / learning they currently deliver including in other organisations / institutions*
- *Any other non-teaching roles they hold (e.g. in relation to curriculum development, management, data, research / evaluation)*

Can you describe the size and structure of your adult maths / numeracy department? *Probe for:*
- *Numbers of tutors*
- *Numbers of classes / students*
- *Range of courses offered by type / level / qualification*

Can you briefly describe the typical backgrounds and needs of your adult maths / numeracy learners? *If necessary, probe for:*
- *Age / gender*
- *Whether English is a first language*
- *Prevalence of health issues / disabilities*
- *Previous qualifications*
- *Confidence in maths*
- *Barriers to learning*
- *Employment status*

Have you or your organisation / department previously taken part in this type of research / evaluation including any trials? Can you tell me more about that? *Probe for:*
- *Levels of organisational commitment to research / evidence-based practice*
- *How / if previous research or evaluation has been used to inform policy and practice*

- *Alignment of the research trial to strategic priorities of organisation*

Please can you confirm the final number of learners and/or classes that took part in the Preparation for Maths GCSE trial (as a control group)? *Probe for:*
- *Numbers of tutors*
- *Numbers of classes / students*
- *Range of courses offered by type / level / qualification*

Please can you confirm the criteria that was used to determine which learners were put forward for their Maths GCSE exam? *Probe for:*
- *Learners' views and role in this decision*
- *At what point the decision of which exam paper learners will sit is made (e.g. before the course has started, during delivery or shortly before the final exam)?*
- *What is the proportion of learners taking part in the trial that were put forward for the exam?*
- *Will all learners taking part in the trial be put forward to sit an exam or will some be discouraged from doing so, e.g. if they are considered not to be ready?*
- *How / does this differ for trial participants compared to previous academic years/non-trial cohorts?*

What is the proportion of learners taking part in the trial that are taught and put forward for the Foundation paper, compared with the Higher paper?
- *What factors went into the decision about if they should sit the Foundation or Higher paper?*

To what extent, if at all, have you been exposed to other Multiply trials whilst being involved in this trial? To what extent, if at all, have your learners been exposed to other Multiply trials? *Probe for:*
- *If so, what trial/s was this? (probe with names if needed Family Numeracy, Embedded Maths in Health and Social Care and Maths Functional Skills Qualifications)*
- *To your knowledge were there any measures in place to make sure trials were kept separate?*
- *Have any materials from this trial or other Multiply trials been shared with you? If so, what was this? Who shared these materials?*

Section B: Views on participation and support during the Preparation for Maths GCSE trial (5 mins)

How and when did you first hear about the Preparation for Maths GCSE trial? How did you find those initial communications? *Probe on:*
- *Where / who did the information come from and what did it say?*
- *How clear were the initial communications you received about the trial, including the requirements of organisations / tutors taking part? Why do you say that?*
- *Were you involved in any discussions / decisions about whether your organisation would sign up to the trial?*

How did your organisation determine which tutors, and which classes / learners, would be taking part in the Preparation for Maths GCSE trial?
- *How many tutors / classes / learners are taking part in the trial?*
- *What proportion of all your Maths GCSE tutors / classes / learners does this cover?*
- *If only some Maths GCSE tutors / classes / learners have been included, how was this decided? What factors were considered?*

How do you feel about being part of the Preparation for Maths GCSE trial? How did you feel being assigned to the control group for this trial? *Probe for:*

- *What were your initial motivations for taking part? What were / are you hoping to get out of it?*
- *To what extent is being part of the trial meeting your expectations? Why do you say that? How / to what extent do you think your views / experiences of the trial would have been different had you been assigned to the treatment group?*

[Interviewer note: If further clarification needed, explain that providers / tutors in the control group do not deliver the Preparation for Maths GCSE sessions and instead delivers BAU Maths GCSE courses, although still have to share learner data with Ipsos and distribute learner surveys. Treatment tutors had to attend a two-hour training session, and deliver seven hour-long sessions throughout the academic year, alongside BAU.]

How clear and useful have the communications been about your role and responsibilities in supporting the trial? Why do you say that?

[Interviewer note: Control tutor responsibilities include sharing information with learners about the trial and providing them with an opportunity to opt-out, and administering surveys to learners. They may also have been responsible for collecting and sharing learner data with Ipsos via the secure online portal.]

Probe for feedback on:

- *Trial-readiness packs – for organisations, tutors and learners*
- *Communications relating to the data and evaluation requirements of the trial, including administering learner surveys and the transfer of learner data to Ipsos via the portal (if relevant to them)*
- *What has worked well / less well and why in the communications and information you have received? How / could this have been improved?*

To what extent have you felt supported throughout the Preparation for Maths GCSE trial? Why is this? *Probe on:*

- *Support with learner data collection and uploading of this to the Ipsos Data Portal*
- *Support provided by consortium partners (e.g. Ipsos, Etio, MEI)*
- *Support provided by provider/their organisation*
- *Do you feel that you have everything you need to take part in the trial? Do you feel that you have everything to sufficiently support and inform learners in the trial? Why do you say that?*
- *Have you had to ask any questions about the trial? Who did you ask and how satisfied were you with the response?*
- *Is there anything missing in the support available that you would have welcomed?*
- *To what extent has the support available been consistent throughout the academic year?*

Section C: 'Business as Usual' GCSE Maths course (15 mins)

[Note to interviewer: tutors will likely be unaware of the intervention that was delivered by 'treatment' tutors to learners. This section is to understand what BAU looks like, without the intervention in place, answering RQ 2 and 3.]

To what extent, if at all, do you provide lessons / support to develop study skills for your GCSE Maths adult learners? If so, what format did this take place this academic year with the learners in the trial? *Probe for:*

- *When is it typically delivered and how much time is dedicated to it? How does this fit around curriculum content?*
- *Do you have any examples of this?*
- *Do you cover any of the following topics: Introduction to Maths GCSE, Calculator Skills, IT Skills, Study Skills, Revision Skills, Growth Mindset/Resilience? Exam Techniques? If so, how?*
- *How consistently do you teach these skills between cohorts/classes?*
- *Are you aware if other tutors in your organisation teach this type of content?*
- *Why did you decide to teach learners these skills, in addition to curriculum content?*

[If delivers some form of study skills support] What is your experience of teaching study skills to your adult learners taking GCSE Maths? What works well/less well? *Probe for:*

- *What have you learned from delivering study skills support to adult learners?*
- *Are there are any aspects that learners engage with more/less? Are there are aspects that learners benefit from more/less?*

What, if any, potential benefits do you think study skills may have on adult learners? *Probe for:*

- *Study skills to use throughout the course*
- *Revision and exam techniques*
- *Resilience*
- *Understanding of growth mindset*
- *IT skills*
- *Calculator skills*
- *Understanding of the GCSE course/exam*

How/ to what extent has delivery of the Maths GCSE course been impacted by staff turnover or absence in your organisation this academic year?

Section D: Experience of the trial and lessons for future delivery (5 mins)

What, if anything, do you feel you have learned or gained from taking part in the research trial?

How would you feel about participating in future research or trials like this? Why do you say that? *Probe for:*

- *Whether they would be happy to take part in future and reasons why*
- *Whether anything would need to change to encourage them to take part in future*

Do you have any thoughts / recommendations as to what could be done to encourage adult education organisations and tutors to take part in future trials like this? *Probe on factors relating to:*

- *Engagement and communications*
- *Timings for preparation / delivery*
- *Training and support provided*
- *Data and evaluation requirements*

That's all the questions I have for you, do you have any questions or comments for me? Anything we haven't covered that you think might be useful for us to be aware of?

Thank you and close / end recording

Topic Guide – Tutor Treatment Wave 2

Introduction

This topic guide is to be used for the second wave of depth interviews with tutors in the treatment group for the Preparation for Maths GCSE Trial.

Questions in **bold** represent the headline questions to be asked within each section. The text in *italics* underneath the bold questions represent suggested probes / potential areas for further exploration to capture more detail where required / time permits.

Priority questions within each section are highlighted in blue – these should be the focus where time is limited to ensure all sections are covered.

Interviewer preparation

A **comprehensive briefing** will be delivered to all interviewers in advance of fieldwork starting. The briefing will incorporate a detailed walk through of the topic guide, providing an opportunity for questions and discussion in relation to each element. It will also cover logistics relating to fieldwork start and end dates, allocation of interviews across the team and information on the approach to recruitment and scheduling.

In advance of fieldwork starting, please ensure you refresh your memory of the key aims and objectives of the **Implementation and Process Evaluation** strand of the Preparation for Maths GCSE trial by reading the relevant section of the Trial Protocol. **Where relevant, please refer back to the previous interview/observation conducted in Wave 1 and familiarise yourself with what was previously covered, using discretion to prevent duplication and enable further discussion**. Inform the participant this interview will follow a similar format to the previous interview.

Please also familiarise yourself with Preparation for Maths GCSE programme by reading the description of this in the Trial Protocol and reviewing the **seven lessons plans** covering:

1. Growth mindset and resilience
2. An introduction to GCSE maths
3. Study skills
4. Using IT
5. Using a calculator
6. Revision techniques
7. Exam techniques.

Finally, please check the current **RAG rating** of the provider based on whether they have 1) participated in the mandatory training for the trial, 2) attended an Autumn KIT call / QA visit with Etio and 3) submitted their learner data to the secure Ipsos Data Portal.

Introductory text

Purpose of interview

Thank you for agreeing to take part in a second interview about your experience of being part of the Preparation for Maths GCSE Multiply Education Research Trial.

I work for Ipsos UK (a research organisation). The Department for Education has appointed us, along with our consortium partners, to deliver the programme of Multiply Education Research Trials. As part of this, we are interviewing all tutors in the treatment group for the Preparation for Maths GCSE trial. The aim of these discussions is to capture tutors' experiences of engagement and participation now the trial has finished. This includes your views and experiences of the training and support provided to enable you to deliver the Preparation for Maths GCSE sessions, how delivery went, and learner engagement / participation in the sessions. We will be focussing our discussion on the final two sessions of the course, and your final reflections now delivery has ended.

Your feedback will be valuable in informing our understanding of the effectiveness of the processes involved in delivering the Preparation for Maths GCSE course and how / in what ways it may or may not be resulting in the intended outcomes for learners. It will also be useful in developing our understanding of what works in enabling / supporting adult education organisations and tutors to take part in research trials.

There are **no right or wrong answers**, we are just interested in hearing about your experiences.

The interview is expected to last approximately **30 to 45 minutes**, following a similar format to the previous interview.

Consent

Participation in the interview is entirely voluntary, and you are free to change your mind and stop the interview at any time. If you need to, you can ask for a break at any point, and if you feel uncomfortable answering any questions then please just let me know and we can move on.

The opinions and views you provide in the interview will be **used for the purpose of evaluating the trial only**. The information you provide will be treated in the strictest confidence by the research team at Ipsos and the answers you provide will not be passed to the Department for Education in a way that will enable you to be identified. The final report of the trial will be published, but you and your organisation will not be named in the report or attributed to anything you have said in the interview.

In accordance with GDPR legislation, the interview documentation, recording and notes will be securely deleted two months after project completion and client sign-off of all reporting outputs and milestones, which we expect to be in May/June 2026.

Do you have any questions for me before we begin? Are you happy to proceed with the interview?

We would like to record the discussion for analysis purposes. The recording will be used to ensure that we transcribe details correctly, it will not be provided to anyone outside of the evaluation team and will be destroyed three months after we have completed the evaluation.

Can I have your permission to audio record the interview?

[Obtain consent on audio recording]

Section A: Introduction and overview of institution / learners (5mins)

a. **For the purpose of the interview, please can you reintroduce yourself? Have there been any changes to your role/responsibilities since we last spoke?** *If not previously covered, probe for:*

- *Formal teaching qualifications*
- *Length of experience teaching maths / adult maths*
- *Previous experience of teaching study / revision skills*
- *Any other types of courses / learning they currently deliver including in other organisations / institutions*
- *Any other non-teaching roles they hold (e.g. in relation to curriculum development, management, data, research / evaluation)*

a. **Please can you confirm the final number of learners and/or classes that took part in the Preparation for Maths GCSE trial?** *Probe for:*

- *Numbers of tutors*
- *Numbers of classes / students*
- *Range of courses offered by type / level / qualification*

a. **Please can you confirm the criteria that was used to determine which learners were put forward for their Maths GCSE exam?** *Probe for:*

- *Learners' views and role in this decision*
- *At what point the decision of which exam paper learners will sit is made (e.g. before the course has started, during delivery or shortly before the final exam)?*
- *What is the proportion of learners taking part in the trial that were put forward for the exam?*
- *What is the proportion of learners taking part in the trial that are taught and put forward for the Foundation paper, compared with the Higher paper?*
    - *Will all learners taking part in the trial be put forward to sit an exam or will some be discouraged from doing so, e.g. if they are considered not to be ready?*
    - *How / does this differ for trial participants compared to usual practice?*

b. To what extent, if at all, have you been exposed to other Multiply trials whilst delivering Preparation for Maths GCSE? To what extent, if at all, have your learners been exposed to other Multiply trials whilst attending the Preparation for Maths GCSE course? *Probe for:*

- *If so, what trial/s was this?*
- *To your knowledge, were there any measures in place to make sure trials were kept separate?*

c. Have you shared any resources or concepts from the Preparation for Maths GCSE course since delivery started? *Probe for:*

- *Now delivery has finished, do you intend to share any resources or concepts with others? Why/why not?*
- *If so, who have you shared them with and why? For example, have you shared with other tutors within your organisation or more widely / externally?*
- *How have they been shared – e.g. online / email / in community of practice sessions?*
- *Were you encouraged to share these resources?*

Section B: Views on participation and support during the Preparation for Maths GCSE trial (5 mins)

a. What are your views on participating in the trial? How, if at all, has this changed from the last interview in earlier this year? *Probe on:*

- *How, if at all, their experience has changed*
- *How, if at all, support and communication has changed*
- *How clear were the ongoing communications you received about the trial, including the requirements of organisations / tutors taking part? Why do you say that? (e.g. learner data uploads)*
- *To what extent is being part of the trial meeting your expectations? Why do you say that?*

a. **How clear and useful have more recent communications been about your role and responsibilities in supporting delivery of the trial? Why do you say that?**

[Interviewer note: Tutor responsibilities include attending a 2hr training session delivered by MEI (who developed the Preparation for Maths GCSE course) in summer 2024; Sharing information with learners about the trial and providing them with an opportunity to opt-out; Administering surveys to learners; and delivering the seven Prep for Maths GCSE sessions. They may also have been responsible for collecting and sharing learner data with Ipsos via the secure online portal.]

Probe for feedback on:

- *Trial-readiness packs – for organisations, tutors and learners*
- *Communications relating to the data and evaluation requirements of the trial, including administering learner surveys and the transfer of learner data to Ipsos via the portal (if relevant to them)*
- *What has worked well / less well and why in the communications and information you have received? How / could this have been improved?*

a. **To what extent have you felt supported throughout the delivery of the Preparation for Maths GCSE trial this academic year? Why is this?** *Probe on:*

- *Support provided by consortium partners (e.g. Ipsos, Etio, MEI)*
- *Support provided by provider/their organisation*
- *Do you feel that you had everything you needed to deliver the course effectively? Why do you say that?*
- *Did you know where to go if you had any questions about delivery?*
- *Have you had to ask any questions about delivery? Who did you ask and how satisfied were you with the response?*
- *Was there anything missing in the support available that you would have welcomed?*
- *To what extent was the support available consistent throughout delivery and the academic year?*

Section C: Delivery of the Preparation for Maths GCSE course (10 mins)

[Note to interviewer: tutors should have delivered the first five Preparation for GCSE sessions after the 42-day probation period at the start of the 2024/25 academic year but still within the Autumn term. The final two sessions were expected to be delivered before Easter 2025. Refer back to the Wave 1 interview to clarify their progress with delivery and tailor the questions in this section accordingly.]

b. **Can you confirm how much of the Preparation for Maths GCSE course you delivered and when?** *Probe for:*

- *When, if at all, did you deliver the final two sessions? (Revision techniques, Exam techniques)*
- *Reasons behind any variations to intended delivery timings / sequencing*
- *Whether they were delivered in one block or over the course of several weeks*
- *Whether all sessions delivered so far were full or partially delivered and reasons for any that were not fully delivered*
- *Whether they have revisited any sessions, and when/why this was*

a. **What was your experience of delivering the final two sessions of the programme?** *Probe for:*

- *Do you think they were delivered at an appropriate time for your learners?*
- *What went well/less well during these final sessions?*

a. How, if at all, do the final two sessions differ from usual practice? *Probe for:*

- *Would you normally explicitly teach study and revision skills as part of adult maths GCSE courses? If so, what format does this teaching usually take? When is it typically delivered and how much time is dedicated to it?*
- *Have you had to make any adaptations to the Maths GCSE curriculum to fit the Prep for GCSE sessions within existing course hours? How do you feel about this? What impact has it had on you / learners?*

a. **Thinking about the final two sessions you have delivered, how well or otherwise have these gone?** *Probe on:*

- *How easy / difficult it has been to integrate the Preparation for Maths GCSE sessions within the curriculum*
- *Whether they were able to cover all the material in the time available*
- *How closely they adhered to the session plans and reasons for any adaptations / variations made in delivery*
- *Views on the timings of the sessions and whether these were appropriate*

a. How / to what extent did you refer back to the study skills content throughout delivery of the Maths GCSE course? Why / why not? *Probe on:*

- *Whether certain sessions required more reliance, and if so which ones*

b. How, and to what extent was delivery of the Preparation for Maths GCSE course impacted by staff turnover or absence in your organisation? How, if at all, has this changed since we last spoke? *Probe for:*

- *Were any of the sessions not delivered due to tutor turnover / absence?*
- *Were any of the sessions delivered by other tutors? If so, did they attend the training or catch up on the recording afterwards?*

c. What, if any, lessons have you learned on how to deliver the Preparation for Maths GCSE course that you would apply if you were to deliver it again in future? Why do you say that? *Probe on:*

- *Lessons around content and any adaptations*
- *Lessons around delivery timing*

d. **What was your overall impression of the Preparation for Maths GCSE course?** *Probe on:*

- *Which parts of the course, if any, did you like the most? Why?*
- *Which parts of the course, if any, did you dislike the most? Why?*

Learner experience, participation and outcomes (10 mins)

e. How engaged were your learners in the final two Preparation for Maths GCSE sessions? *Probe on:*

- *Learner attendance at the sessions, and how (if at all) this compared to attendance on the business as usual Maths GCSE course*
- *How engaged were learners in the individual sessions*
- *Any aspects of the two sessions that were more / less engaging for learners and why*
- *Enablers / barriers to learner engagement and participation in the sessions*

f. What (if anything) do you think your learners gained from taking part in the Preparation for Maths GCSE sessions? What is this view based on (your own observations and / or direct feedback from learners)? *Probe for:*

- *Study skills to use throughout the course*
- *Revision and exam techniques*
- *Resilience*
- *Understanding of growth mindset*

a. **Which of the Preparation for Maths GCSE sessions do you think have been or will be most/least useful in improving learner outcomes and why?** *Probe for:*

6. *Growth mindset and resilience*
7. *An introduction to GCSE maths*
8. *Study skills*
9. *Using IT*
10. *Using a calculator*
11. *Revision techniques*
12. *Exam techniques*

[Interviewer Note: Providers should have delivered the all sessions (listed above) and so the discussion should focus on the final two sessions. (6. Revision techniques and 7. Exam techniques)

b. Do you think there were any groups of learners for which the Preparation for Maths GCSE course and study skill strategies were more/less useful for? Why do you think this?

Section E: Experience of the trial and lessons for future delivery (5mins)

16. **Since we last spoke- what, if anything, do you feel you have learned or gained now you have finished delivering the Preparation for Maths GCSE sessions? What, if anything, do you feel you have learned or gained from taking part in the research trial more generally?**

- *Probe on: Teaching methods, Confidence in teaching*

- *Based on your experience, has the programme been worthwhile?*

a. **If you were to deliver the Prep for Maths GCSE sessions again, is there anything you would do differently?**

- *Would you recommend that the Prep for Maths GCSE approach be rolled out to more adult learning providers? Why/why not?*

    - *What lessons do you think have been learned from the trial about developing interventions for trialling in the adult education sector?*

a. **How would you feel about participating in future research or trials like this? Why do you say that?** *Probe for:*

    - *Whether they would be happy to take part in future and reasons why*
    - *Whether anything would need to change to encourage them to take part in future*

a. **Do you have any thoughts / recommendations as to what could be done to encourage adult education organisations and tutors to take part in future trials like this?** *Probe on factors relating to:*

    - *Engagement and communications*
    - *Timings for preparation / delivery*
    - *Training and support provided*
    - *Data and evaluation requirements*

a. **That's all the questions I have for you, do you have any questions or comments for me? Anything we haven't covered that you think might be useful for us to be aware of?**

Thank you and close / end recording

Topic Guide - Providers

Introduction

This topic guide is to be used for the interviews with **Representatives from providers** in treatment and control groups who are responsible for liaising with the Managed Service Supplier (Etio) and adhering to the trial requirements including in relation to data.

Questions in **bold** represent the headline questions to be asked within each section. The text in *italics* underneath the bold questions represent suggested probes / potential areas for further exploration to capture more detail where required / time permits.

Priority questions within each section are highlighted in blue – these should be the focus where time is limited to ensure all sections are covered.

Interviewer preparation

A **comprehensive briefing** will be delivered to all interviewers in advance of fieldwork starting. The briefing will incorporate a detailed walk through of the topic guide, providing an opportunity for questions and discussion in relation to each element. It will also cover logistics relating to fieldwork start and end dates, allocation of interviews across the team and information on the approach to recruitment and scheduling.

In advance of fieldwork starting, please ensure you refresh your memory of the key aims and objectives of the **Implementation and Process Evaluation** strand of the Preparation for Maths GCSE trial by reading the relevant section of the Trial Protocol. Please also familiarise yourself with Preparation for Maths GCSE programme by reading the description of this in the Trial Protocol and reviewing the **seven lessons plans** covering:

1. Growth mindset and resilience
2. An introduction to GCSE maths
3. Study skills
4. Using IT
5. Using a calculator
6. Revision techniques
7. Exam techniques.

Finally, please familiarise yourself with the type of stakeholder and their role in the Pilot Trial ahead of the interview. The questions have been tailored to the stakeholder type, showing discretion based on their job role and organisation.

Introductory text

Purpose of interview

Thank you for agreeing to take part in an interview about your experiences of being part of the Preparation for Maths GCSE trial.

I am [insert name and role] and I work for Ipsos. As you will be aware, the Department for Education has appointed our team to deliver the Preparation for Maths GCSE pilot trial. The trial aims to assess how the Preparation for Maths GCSE course was delivered and the difference it has made to learners. The trial also aims to understand experiences of delivering RCTs in adult education settings. We are currently conducting interviews with other stakeholders, alongside learners and tutors involved in the trial.

We understand that your organisation may have been involved with other Multiply trials. However, today's discussion will focus on your experiences of the Preparation for Maths GCSE trial exclusively. This will cover what you think worked well and less well, and will explore any improvements that could be taken forward to inform future RCTS delivered in adult education settings.

Your feedback will be valuable in informing our understanding of the effectiveness of the processes involved in delivering the Preparation for Maths GCSE course and how / in what ways it may or may not be resulting in the intended outcomes for learners. It will also be useful in developing our understanding of what works in enabling / supporting adult education organisations and tutors to take part in research trials.

There are **no right or wrong answers**, we are just interested in hearing about your experiences.

The interview is expected to last approximately **45 minutes**.

Consent

Participation in the interview is entirely voluntary, and you are free to change your mind and stop the interview at any time. If you need to, you can ask for a break at any point, and if you feel uncomfortable answering any questions then please just let me know and we can move on.

The opinions and views you provide in the interview will be **used for the purpose of evaluating the trial only**. The information you provide will be treated in the strictest confidence by the research team at Ipsos and the answers you provide will not be passed to the Department for Education in a way that will enable you to be identified. The final report of the trial will be published, but you will not be directly named in the report.

In accordance with GDPR legislation, the interview documentation, recording and notes will be securely deleted two months after project completion and client sign-off of all reporting outputs and milestones, which we expect to be in May/June 2026.

Do you have any questions for me before we begin? Are you happy to proceed with the interview?

We would like to record the discussion for analysis purposes. The recording will be used to ensure that we transcribe details correctly, it will not be provided to anyone outside of the evaluation team and will be destroyed three months after we have completed the evaluation.

Can I have your permission to audio record the interview?

[Obtain consent on audio recording]

Section A: Introduction and involvement with trial (5 mins)

Please can you begin by introducing yourself and telling me about your current role within your organisation. *Probe for:*

- *Their role and organisation*
- *Previous experiences, if any, with research, evaluation or trials*

What has been your role and involvement with the Preparation for Maths GCSE pilot trial? *Probe for:*

- *Initial and ongoing day-to-day responsibilities in relation to the trial*
- *Timings of involvement*
- *Intensity of involvement*

How and when did you first become aware of the Preparation for Maths GCSE pilot trial? *Probe for:*

- *Views on the messaging of the trial advertisement/communications*
- *Nature of the process to engage as an organisation*

As an organisation, why did you decide to participate in the Preparation for Maths GCSE trial? *Probe for:*

- *What were your / your organisation's motivations for taking part in the trial? Probe in relation to: access to additional funding; access to new interventions to support your learners; opportunity to be part of a high profile research study; opportunity to work with the DfE; reputational reasons*
- *How important was the incentive payment in your decision to take part in the trial? (Prompt if needed Incentive was a £1,000 one off payment)*
- *Did you / your organisation have any reservations / concerns about taking part in the trial? Did you face any barriers / challenges to participating? What were they and how were they overcome?*
- *Did you consult with relevant teaching staff when you were making this decision to? Why/why not?*
- *Did you consult with anyone else in your organisation? Who and what were their views / motivations for taking part in the trial?*

To what extent, if at all, has your organisation been exposed to other Multiply trials? If so, how?

Section B: Marketing and promotion of the trial (10mins)

What did you think of the marketing used to promote the Prep for Maths GCSE trial? Which aspects, if any, encouraged you to express an interest? *Probe on:*

- *Different aspects of the campaign: direct communications, social media, conference promotion, webinars, mass email communications, What aspects of the marketing / promotion were most effective in encouraging you to express an interest? (e.g. potential benefits, opportunity to be involved in research)*
    - *Were there any aspects of the marketing / promotion that were less effective in encouraging you to express an interest?*
    - *How, if at all, could the marketing / promotion of the trial be improved next time?*

Which aspects of the marketing / recruitment campaign for the trial were most effective in encouraging your organisation to express an interest in the trial? Why was this? *Probe on:*

Section C: Recruitment and motivations to take part in the trial (10 mins)

Once you had expressed an interest, what motivated you/your organisation to go on to sign up to for the Prep for Maths GCSE trial? *Probe for:*

- *What was the primary reason(s)? Why? (e.g. CPD, staff development)*
- *What encouraged you to sign up after the initial EOI stage?*
- *Did you / your organisations have any reservations / barriers? How were these overcome?*

How did you feel about your organisation being assigned to the control group/treatment group? To what extent has this impacted your experience of the trial? Why do you say that?

Overall, how would you describe your experience of the recruitment and registration process for the Prep for Maths GCSE trial? *Probe on:*

- *Were there any aspects that worked particularly well? Why do you say that?*

- *Were there any aspects that worked less well and could have been improved? Why do you say that?*
- *What, if any, recommendations do you have for future recruitment of adult education organisations to research trials?*

Section D: Experiences of training and taking part in the trial (15 mins)

[Treatment providers only] **How well were the tutor training requirements for the trial communicated to you / your organisation?** *Probe for:*

- *How did the training fit around your tutor(s)' existing teaching and employment commitments? What approach was taken to ensure staff could be released to attend?*
- *Did you feel the time for training was realistic and feasible? Why/why not?*
- *To what extent were your tutors/your organisation given sufficient notice of the tutor training requirements?*
- *How did your organisation decide which tutors would attend the training and deliver the Prep for Maths GCSE course? Did all tutors delivering adult maths GCSE courses take part? Why / why not?*

Did you experience any staff turnover during the trial? If yes how did you manage this?

- *Did it have any impact on the delivery of the trial? If so, how / in what ways?*
- *Did it have any impact on the learner experience of the trial? If so, how / in what ways?*

How clearly were the data and evaluation requirements for the Prep for Maths GCSE trial communicated to you? What is your feedback on the information and support provided to enable you to meet the data and evaluation requirements?

- *What were your thoughts on the trial-readiness packs? What worked well / less well? Do you have any suggestions for improvements?*
- *Did you share the trial-readiness packs with your staff? Why/why not?*
- *Did you attend any of the webinars explaining the data and evaluation requirements of the trial? Do you have any feedback on these?*
- *Did you reach out for any help and support on the data and evaluation requirements of the trial? Who did you reach out to? What is your feedback on the support received?*
- *How far were the data and evaluation requirements for the trial in line with what you expected from the outset? What was the reason for any differences?*

[Interviewer note: Data sharing requirements included sharing learner data by uploading to the Ipsos Data Portal. Tutors were also responsible for sharing

recruitment materials for the baseline learner survey] What was your experience of collecting and sharing data in line with the trial requirements?

- Who within your organisation was responsible for data sharing and uploads? What role, if any, did tutors have in relation to collecting and sharing learner data?

- What worked well/less well in relation to data sharing and the communications about it? Are there any aspects that worked less well and could have been improved?

Overall, what was your experience of participating in the Prep for Maths GCSE trial?

- *Are there any aspects that you think went particularly well?*
- *Are there any aspects that you think went less well and could have been improved?*
- *Do you have any recommendations as to how delivery of future trials like this could be improved?*
- *What is your feedback on the support that was made available to you and colleagues to enable you to deliver on the requirements of the trial?*

[Treatment providers only] **Have you or do you plan to have a debrief with tutors about their experience of the Preparation for Maths GCSE trial?** (Note for researchers- acknowledge that if they have not had a debrief session with tutors they may not be able to answer thew following 3 questions)

[Treatment providers only] **To what extent (if at all) do you think the Preparation for Maths GCSE intervention has influenced staff teaching methods for adult maths GCSE? What, if any, plans do your tutors have to reuse the teaching resources and materials provided?**

[Treatment providers only] **Do you have any thoughts / feedback on the nature and content of the Prep for Maths GCSE course? Why do you say that?**

- *Would you recommend the intervention approach be rolled out to more adult learning providers? Why/why not?*

[Treatment providers only] **Do you have any thoughts / feedback on the timings for preparing and delivering the Prep for Maths GCSE course?**

What has been your experience of the contracting and contract management elements of the trial (i.e. the process of contracting with Etio, contractual obligations including in relation to submitting learner data via the Etio portal,

submitting invoices / receiving payments, KiT calls and QA visits)? Why do you say that? *Probe on:*

- Which elements of contracting / contract management would you say have worked well and why?
- Are there any elements that have worked well? Why do you say that? How could they have been improved?

[Treatment providers only] **To what extent do you think the Preparation for Maths GCSE course was feasible for tutors to deliver within the trial / course requirements? Why/why not?**

Section E: Lessons for future trials (5mins)

What lessons do you think have been learned from the Prep for Maths GCSE pilot trial that could influence the delivery of this intervention in the future?

- *What, if anything, would you do differently if you were working on this intervention in the future?*
- *Based on your experiences, has the programme/trial been worthwhile?*

What lessons do you think have been learned from this trial about delivering RCTs in adult education settings more generally?

How would you feel about participating in future research or trials like this?

That's all the questions I have for you, do you have any questions or comments for me? Anything we haven't covered that you think might be useful for us to be aware of?

Finally before we finish today please can I remind you to upload any ILR data if you have not done so yet. If you have not uploaded yet are you able to tell us when you plan to upload?

Thank you and close / end recording

Topic Guide – MSS

Introduction

This topic guide is to be used for interviews with the **Managed Service Supplier** (Etio, formerly Tribal), who are responsible for recruiting providers to the trial, contracting with them, and monitoring performance and compliance with the trial requirements.

Questions in **bold** represent the headline questions to be asked within each section. The text in *italics* underneath the bold questions represent suggested probes / potential areas for further exploration to capture more detail where required / time permits.

Priority questions within each section are highlighted in blue – these should be the focus where time is limited to ensure all sections are covered.

Interviewer preparation

A **comprehensive briefing** will be delivered to all interviewers in advance of fieldwork starting. The briefing will incorporate a detailed walk through of the topic guide, providing an opportunity for questions and discussion in relation to each element. It will also cover logistics relating to fieldwork start and end dates, allocation of interviews across the team and information on the approach to recruitment and scheduling.

In advance of fieldwork starting, please ensure you refresh your memory of the key aims and objectives of the **Implementation and Process Evaluation** strand of the Preparation for Maths GCSE trial by reading the relevant section of the Trial Protocol. Please also familiarise yourself with Preparation for Maths GCSE programme by reading the description of this in the Trial Protocol and reviewing the **seven lessons plans** covering:

1. Growth mindset and resilience
2. An introduction to GCSE maths
3. Study skills
4. Using IT
5. Using a calculator
6. Revision techniques
7. Exam techniques.

Finally, please familiarise yourself with this stakeholder and their role in the Pilot Trial ahead of the interview. The questions have been tailored to the stakeholder type, showing discretion based on their job role and organisation.

Introductory text

Purpose of interview

Thank you for agreeing to take part in an interview about your experiences of being part of the Preparation for Maths GCSE trial.

I am [insert name and role] and I work for Ipsos. As you will be aware, the Department for Education has appointed our team to deliver the Preparation for Maths GCSE pilot trial. The trial aims to assess how the Preparation for Maths GCSE course was delivered and the difference it has made to learners. The trial also aims to understand experiences of delivering RCTs in adult education settings. We are currently conducting interviews with other stakeholders, alongside learners and tutors involved in the trial.

We understand you have been involved in supporting delivery of several of the Multiply trials. However, today's discussion will focus on your experiences of marketing, promotion, recruitment and contract management for the Preparation for Maths GCSE trial exclusively. This will cover what you think worked well and less well with these processes and will explore any improvements that could be taken forward to inform future RCTs delivered in adult education settings.

Your feedback will be valuable in informing our understanding of the effectiveness of the processes involved in delivering the Preparation for Maths GCSE trial and will also be useful in developing our understanding of what works in enabling / supporting adult education organisations and tutors to take part in research trials.

There are **no right or wrong answers**, we are just interested in hearing about your experiences.

The interview is expected to last approximately **45 minutes**.

Consent

Participation in the interview is entirely voluntary, and you are free to change your mind and stop the interview at any time. If you need to, you can ask for a break at any point, and if you feel uncomfortable answering any questions then please just let me know and we can move on.

The opinions and views you provide in the interview will be **used for the purpose of evaluating the trial only**. The information you provide will be treated in the strictest confidence by the research team at Ipsos and the answers you provide will not be passed to the Department for Education in a way that will enable you to be identified. The final report of the trial will be published, but you will not be directly named in the report. Due to the nature of your role, you may be identifiable to some readers, however we will not use direct quotes that can be directly attributed to you. In some instances, we may recontact you to confirm you consent to certain quotes being used prior to publication.

In accordance with GDPR legislation, the interview documentation, recording and notes will be securely deleted two months after project completion and client sign-off of all reporting outputs and milestones, which we expect to be in May/June 2026.

Do you have any questions for me before we begin? Are you happy to proceed with the interview?

We would like to record the discussion for analysis purposes. The recording will be used to ensure that we transcribe details correctly, it will not be provided to anyone outside of the evaluation team and will be destroyed three months after we have completed the evaluation.

Can I have your permission to audio record the interview?

[Obtain consent on audio recording]

Section A: Introduction and involvement with trial (5mins)

Please can you begin by introducing yourself and telling me about your current role within Etio. *Probe for:*

- *How long they have been in this role, and a*
- *y changes to this over the period of the trials?*
- *Background on Etio as an organisation, and prior experience working with providers in the adult education sector*
- *Previous experience, if any, with research, evaluation or trials in education settings*

What has been your role and involvement with the Preparation for Maths GCSE pilot trial? *Probe for:*

- *Roles in relation to marketing, promotion, recruitment, contracting, contract management, compliance, data, stakeholder engagement*
- *Day-to-day responsibilities in relation to the trial and if / how these have changed over time*

Section B: Marketing and promotion of the trial (10mins)

[Clarify that this section refers to marketing/promotion of the trial, and that recruitment processes will be covered later]

Can you talk me through the approach that Etio took to marketing and promotion of the Prep for Maths GCSE trial to eligible providers? *Probe for feedback on:*

- *What types of approaches were taken and when? Can you provide examples?*
- *Who was involved in deciding the strategy / approach to marketing and promotion for this trial?*
- *How was the marketing content developed? Who was involved in this?*
- *How did you tailor your marketing and promoting strategies to engage different types of providers?*

What was the rationale behind this strategy / approach to marketing and promotion of the trial? *Probe on:*

- *To what extent do you feel this approach worked well for recruiting sufficient numbers of eligible providers? Why / why not?*

What do you think worked particularly well or less well in promoting the Prep for Maths GCSE trial to eligible providers and securing their interest / engagement in taking part? Why do you say that? *Probe for:*

- *What types of messaging were most / least effective in engaging providers take part?*
- *Facilitators (Probe for: Briefings from Ipsos/DfE, Timings, Webinars/content, Funding/budget, Resource, Expertise)*
- *Barriers (Probe for: Briefings from Ipsos/DfE, Timings, Webinars/content, Funding/budget, Resource, Expertise)*

Do you have any reflections on potential improvements for future trial promotion?

Section C: Recruitment to the trial (10 mins)

What were the key stages involved in recruiting providers to the Prep for Maths GCSE trial and what was involved in each? Probe for:

- *Each stage of recruitment from initial EOIs through to contracting*
- *What worked well, less well and why at each stage / anything that could have been improved*

How would you describe your overall experience of recruiting providers to the Preparation for Maths GCSE trial? *Probe for:*

- *How easy/difficult was it to recruit providers to this trial? Why was this? How did it compare to the other trials you were recruiting for?*
- *What were the main challenges faced in recruiting providers to the Prep for Maths GCSE trial? How did you adapt your approach in response to these challenges?*
- *What worked particularly well in converting initial enquiries / EOIs into sign-ups/participation in the Prep for GCSE trial?*

What were the main reasons for attrition of providers from the Prep for Maths GCSE trial during the recruitment phase? What (if anything) do you think could have been done to minimise this?

Experiences of contracting and contract management (15 mins)

What was the process to contracting with providers and how well did this work? *Probe for:*

- *What were the key stages involved and what wo*
- *ked well / less well with each and why? Are there any aspects that could have been improved?*

Can you describe the process after providers signed up for the trial and before delivery started? What communications did providers receive and when / what were they asked to do? *Probe for:*

- *Scheduling and communication of the Prep for Maths GCSE tutor training session*
- *Distribution of the trial-readiness packs, and any feedback from providers on these*
- *Launch webinars / information sessions to discuss trial requirements*
- *Any contract management requirements e.g. around confirming learner numbers / delivery dates etc*
- *Anything that worked well/less well and why during this phase and anything that could have been improved*

How often and when did you conduct calls / visits to keep in touch with providers during trial delivery? *Probe for:*

- *What was covered during these calls / visits?*
- *Did you have much contact with providers outside of these calls? Why / for what purpose?*

- *What steps, if any, were taken to reduce drop-out/attrition from the trial?*
- *Strategies to ensure adherence to trial requirements and action taken if providers did not comply with requirements*
- *Anything that worked well/less well and why during this phase and anything that could have been improved*

What were the main reasons that providers dropped out of the Prep for Maths GCSE trial once delivery was underway? What (if anything) do you think could have been done to minimise this?

Section E: Lessons for future trials (5mins)

What was your overall impression of the Preparation for Maths GCSE trial, as the managed services supplier?

What lessons do you think have been learned from the Prep for Maths GCSE pilot trial that could influence the delivery of this intervention in the future?

What lessons do you think have been learned from this trial about delivering RCTs / pilot RCTs in adult education settings more generally?

- *What, if anything, would you do differently if you were working on a similar trial in the future?*
- *What recommendations would you have for future marketing, promotion, recruitment and communications relating to trials like this?*
- *What recommendations would you have for future contracting / contract management of providers recruited to trials like this?*

How would you feel about participating in future research or trials like this?

- *Based on your involvement, has your experience with this trial been worthwhile? Why/why not?*

That's all the questions I have for you, do you have any questions or comments for me? Anything we haven't covered that you think might be useful for us to be aware of?

Thank you and close / end recording

Topic Guide – Product Developer

Introduction

This topic guide is to be used for the interviews with the product developer for the Preparation for Maths GCSE course (MEI).

Questions in **bold** represent the headline questions to be asked within each section. The text in *italics* underneath the bold questions represent suggested probes / potential areas for further exploration to capture more detail where required / time permits.

Priority questions within each section are highlighted in blue – these should be the focus where time is limited to ensure all sections are covered.

Interviewer preparation

A **comprehensive briefing** will be delivered to all interviewers in advance of fieldwork starting. The briefing will incorporate a detailed walk through of the topic guide, providing an opportunity for questions and discussion in relation to each element. It will also cover logistics relating to fieldwork start and end dates, allocation of interviews across the team and information on the approach to recruitment and scheduling.

In advance of fieldwork starting, please ensure you refresh your memory of the key aims and objectives of the **Implementation and Process Evaluation** strand of the Preparation for Maths GCSE trial by reading the relevant section of the Trial Protocol. Please also familiarise yourself with Preparation for Maths GCSE programme by reading the description of this in the Trial Protocol and reviewing the **seven lessons plans** covering:

1. Growth mindset and resilience
2. An introduction to GCSE maths
3. Study skills
4. Using IT
5. Using a calculator
6. Revision techniques
7. Exam techniques.

Finally, please familiarise yourself with the type of stakeholder and their role in the Pilot Trial ahead of the interview. The questions have been tailored to the stakeholder type, showing discretion based on their job role and organisation.

Introductory text

Purpose of interview

Thank you for agreeing to take part in an interview about your experiences of being part of the Preparation for Maths GCSE trial.

I am [insert name and role] and I work for Ipsos. As you will be aware, the Department for Education has appointed our team to deliver the Preparation for Maths GCSE pilot trial. The trial

aims to assess how the Preparation for Maths GCSE course was delivered and the difference it has made to learners. The trial also aims to understand experiences of delivering RCTs in adult education settings. We are currently conducting interviews with other stakeholders, alongside learners and tutors involved in the trial.

Today's discussion will cover your experiences of developing the Preparation for Maths GCSE course for a research trial. This will cover what you think worked well and less well, and will explore any improvements that could be taken forward to inform future RCTS delivered in adult education settings.

Your feedback will be valuable in informing our understanding of what works in developing interventions suitable for research trials within the adult education sector.

There are **no right or wrong answers**, we are just interested in hearing about your experiences.

The interview is expected to last approximately **45 minutes**.

Consent

Participation in the interview is entirely voluntary, and you are free to change your mind and stop the interview at any time. If you need to, you can ask for a break at any point, and if you feel uncomfortable answering any questions then please just let me know and we can move on.

The opinions and views you provide in the interview will be **used for the purpose of evaluating the trial only**. The information you provide will be treated in the strictest confidence by the research team at Ipsos and the answers you provide will not be passed to the Department for Education in a way that will enable you to be identified. The final report of the trial will be published, but you will not be directly named in the report. Due to the nature of your role, you may be identifiable to some readers, however we will not use direct quotes that can be directly attributed to you. In some instances, we may recontact you to confirm you consent to certain quotes being used prior to publication.

In accordance with GDPR legislation, the interview documentation, recording and notes will be securely deleted two months after project completion and client sign-off of all reporting outputs and milestones, which we expect to be in May/June 2026.

Do you have any questions for me before we begin? Are you happy to proceed with the interview?

We would like to record the discussion for analysis purposes. The recording will be used to ensure that we transcribe details correctly, it will not be provided to anyone outside of the evaluation team and will be destroyed three months after we have completed the evaluation.

Can I have your permission to audio record the interview?

[Obtain consent on audio recording]

Section A: Introduction and involvement with trial (5mins)

Please can you begin by introducing yourself and telling me about your current role within your organisation. *Probe for:*
Their role and organisation
Previous experiences, if any, with research, evaluation or trials

What was your involvement with the Preparation for Maths GCSE pilot trial? *Probe for:*
Recruitment of providers (e.g. involvement in events with Etio) and designing recruitment materials
Design of intervention (including learning resources and lesson plans)

Section B: Recruitment and training (10 mins)

What was your experience of working with Etio to recruit providers to the trial? *Probe for:*

From your perspective, what are your reflections on the recruitment approach to the trial? What worked well, what worked less well and why? Anything that you think could have been done better?

Have you or others at MEI contacted Etio since any initial contact? If so, how was this?

What are your views on the nature and content of training delivered to tutors delivering the Prep for Maths GCSE course? *Probe for:*

- *Timing of training (September)*
- *Duration of training (2 hours)*
- F*ormat of training (online)*
- *Content/detail of training*

What was your experience of delivering the training to tutors? *Probe for:*

- *What was the level of attendance at the training?*
- *Was the training delivered online or in person?*

To what extent do you think attendees were engaged in the training? What promoted engagement? What hindered engagement?

- *What aspects of the training worked well?*
- *What aspects of the training worked less well? What do you think could improve training for next time?*
- *Do you feel the time for training was realistic and feasible for tutors?*

What feedback, if any, did you receive from providers/tutors about the training?

- *Were there elements of the course that proved to be particularly challenging for tutors to grasp?*
- *Were any adjustments made to the training based on the feedback?*

Section C: Experiences of developing trial content (10 mins)

What was your role in developing the Preparation for Maths GCSE programme, and ensuring its trial readiness? *Probe on:*

What was the process and associated timings for developing the programme?

Who else was involved / engaged / consulted in the development of the programme? Were any tutors / learners engaged in the development process?

To what extent did the programme need to be adapted to ensure it was suitable for trial? What was the process for this? What were the timings? Who was involved?

Please can you talk me through the initial reasoning for developing the product (i.e. the Preparation for Maths GCSE intervention? *Probe on:*

Where did the idea originate from? Where was the evidence of need / demand?

What was the underpinning rationale? What, if any, evidence was this based on?

Please talk me through the process you took to develop content for intervention delivery, including learner and tutor resources? *Probe for:*

- *Use of existing evidence? Or similar programmes?*
- *What do you think went well, less well and why? Anything you would do differently in future?*

- *Who else, if anyone, was involved in developing or reviewing these resources?*
- *Have you contacted any of the evaluation teams (Ipsos) for support with the evaluation/development? If so, how was this?*
- *What support was provided to you and your colleagues? What was your experience of this support?*

What was your experience of the process involved in making it 'trial ready'? Why do you say that? *Probe for:*
How did you ensure the training, lesson plans, and materials were 'trial ready' specifically (i.e. sufficiently high quality to be rolled out)?

- *What was your experience of engaging with the DfE on developing the intervention? What worked well / less well and why?*
- *What was your experience of engaging with Ipsos and supporting development of the Theory of Change / Trial Protocol? What worked well, less well and why?*
- *What (if anything) do you think could have been done to improve the trial-readiness of the programme? Why do you say that?*
- *Do you have any feedback on how the trial-readiness process could have been improved?*

To what extent do you think the Prep for Maths GCSE course was feasible for providers/tutors to implement within trial / course requirements? Why do you say that?

To what extent do you think providers and tutors will have been able to comply with the intervention? Why do you say that?

Section D: Lessons for future trials (5mins)

What was your overall impression of being involved in this trial, as the product developer?

- *Were there any challenges or barriers in being part of the trial?*

What lessons (if any) do you think have been learned from the Prep for Maths GCSE pilot trial that could influence the delivery of this intervention in the future?

What lessons do you think have been learned from the trial about developing interventions for trialling in the adult education sector more generally?

- *What, if anything, would you do differently if you were working on or product designing for a similar trial in the future?*
- *How could we encourage adult education providers/the broader sector to participate in more trials or RCTs like this one?*

How would you feel about participating in future research or trials like this?

That's all the questions I have for you, do you have any questions or comments for me? Anything we haven't covered that you think might be useful for us to be aware of?

Thank you and close / end recording

Survey Questions

Demographic questions asked at baseline

QPARENT How many children under the age of 18 do you have parental responsibility for and/or legal guardianship?

1. Numeric [1-10]

2. None

3. Prefer not to say

QCARE Do you look after, or give any help or support to, anyone because they have long-term physical or mental health conditions or illnesses, or problems related to old age?

1. No

2. Yes – 9 hours a week or less

3. Yes – 10 to 19 hours a week

4. Yes – 20 to 34 hours a week

5. Yes – 35 to 49 hours a week

6. Yes – 50 hours or more a week

7. Don’t know

8. Prefer not to say

QCARE Have you ever spent time in the care system?

1. Yes as a child or young person (under 18 years old)

2. Yes, as an adult between 18-25 years old

3. No

4. Don’t know

5. Prefer not to say

QGENDER Which of the following best describes your gender?

1. Man

2. Woman

3. Non-binary

4. My gender is not listed

5. Prefer not to say

QETHNCITY Which one of these ethnic groups would you describe yourself as belonging to?

1. English / Welsh / Scottish / Northern Irish / British

2. Irish

3. Gypsy or Irish Traveller

4. Any other White background

5. White and Black Caribbean

6. White and Black African

7. White and Asian

8. Any other Mixed / multiple ethnic background

9. Indian

10. Pakistani

11. Bangladeshi

12. Chinese

13. Any other Asian background

14. African

15. Caribbean

16. Any other Black / African / Caribbean background

17. Arab

18. Any other ethnic group

19. Prefer not to answer

QQUALANY Do you have any formal qualifications?

1. Yes

2. No

3. Don’t know

QQUALGCSE Have you achieved a GCSE or equivalent in any subject?

1. Yes

2. No

3. Don’t know

QQUALGCSEMATHS Were any of your GCSE or equivalent qualifications in maths?

1. Yes – at grade 4 GCSE or above (C or above) or Grade 1 at CSE

2. Yes – at grade 3 GCSE or below (D or below) or Grade 2, 3, 4 or 5 at CSE

3. No

4. Don’t know / can't remember

5. Prefer not to say

QQUALALEVEL Have you achieved an AS, A level or equivalent in any subject?

1. Yes

2. No

3. Don’t know

QQUALNVQ Have you achieved an NVQ or equivalent qualification in any subject?

1. NVQ level 3 or equivalent

2. NVQ level 2 or equivalent

3. NVQ level 1 or equivalent

4. None of these apply

5. Don’t know

QQUALDEGREE Have you achieved a qualification at degree level or above in any subject?

1. Yes

2. No

3. Don’t know

QHEALTH1 Do you have any physical or mental health conditions or illnesses lasting or expected to last for 12 months or more?

1. Yes

2. No

3. Don't know

4. Prefer not to say

QHEALTH2 Does your condition or illness reduce your ability to carry out day-to-day activities?

1. Yes – a lot

2. Yes – a little

3. No

4. Prefer not to say

QENG1 Is English your first language?

1. Yes

2. No

3. Prefer not to say

QMOJ In the last 10 years, have you received any of the following sentences from a court and a Judge?

a) A community sentence, which includes compulsory (unpaid) work, observing a curfew, being excluded from certain areas and certain activities and being required to get treatment for mental health conditions, drug and/or alcohol addiction

b) A custodial sentence, served in a prison

1. Yes

2. No

3. Prefer not to say

QINC1 The next question is about your household's total income, before taxes and any other deductions. Would you like to answer it as annual, monthly or weekly?

1. Annual

2. Monthly

3. Weekly

4. Prefer not to say

QINC2 What is the combined total annual income (before taxes and any other deductions) earned by all members of your household?

1. Under £5,000

2. £5,000 - £9,999

3. £10,000 - £14,999

4. £15,000 - £19,999

5. £20,000 - £24,999

6. £25,000 - £34,999

7. £35,000 - £44,999

8. £45,000 - £54,999

9. £55,000 - £99,999

10. £100,000 or more

11. Prefer not to say

QINC3 What is the combined total monthly income (before taxes and any other deductions) earned by all members of your household?

1. Under £400

2. £400 - £829

3. £830 - £1,249

4. £1,250 - £1,649

5. £1,650 - £2,099

6. £2,100 - £2,899

7. £2,900 - £3,749

8. £3,750 - £4,579

9. £4,580 - £8,329

10. £8,330 or more

11. Prefer not to say

QINC4 What is the combined total weekly income (before taxes and any other deductions) earned by all members of your household?

1. Under £100

2. £100 - £199

3. £200 - £289

4. £290 - £389

5. £390 - £489

6. £490 - £679

7. £680 - £869

8. £870 - £1,059

9. £1,060 - £1,919

10. £1,920 or more

11. Prefer not to say

Unique questions at baseline: Prep for Maths GCSE

QPREWORK Which best describes what you were doing?

1. Working as an employee part-time (less than 30 hours per week)

2. Working as an employee full-time (more than 30 hours per week)

3. Self-employed or freelance

4. Temporarily away from work ill, on holiday or temporarily laid off

5. On maternity or paternity leave

6. Doing any other kind of paid work

7. Retired (whether receiving pension or not)

8. Studying

9. Looking after home or family

10. Long-term sick or disabled

11. Waiting to start a job already accepted

12. Unemployed and looking for work

13. Unemployed and not looking for work

14. Something else (please type in)

15. Prefer not to say

QPREWORKEVER Have you ever done any paid work?

1. Yes, in the last 12 months

2. Yes, but not in the last 12 months

3. No, have never worked

4. Prefer not to say

QPREVCOURSE Had you ever taken a course as an adult to improve your maths skills?

1. Yes – completed it

2. Yes – enrolled in a course, but did not complete it

3. No

4. Don’t know / can’t remember

QREASCOURSE Why do you want to do this course?

1. To help you to get a job you want

2. To make you better at your current job (IF WORKING BEFORE THE COURSE QPREWORK =1-6)

3. To help you get on another course or training programme

4. To help you complete day-to-day tasks

5. To improve your skills or knowledge

6. For personal enjoyment / interest

7. Because you were encouraged to by a family member / friend

8. Because you were encouraged to by an employer

9. Because you were encouraged by a Jobcentre Plus work coach

10. Because you were told you had to by a Jobcentre Plus work coach or you would lose some of your benefits

11. Because it was free

12. To help children with maths homework

13. To be able to support your child's education

14. To improve your parenting skills

15. To improve your skills and knowledge about maths

16. To improve your skills for your current job (IF WORKING BEFORE THE COURSE QPREWORK =1-6)

17. To improve your employability

18. Another reason (please type in)

19. Don't know

QREASCOURSEMAIN What is the MAIN reason you want to do this course?

1. To help you to get a job you want

2. To make you better at your current job

3. To help you get on another course or training programme

4. To help you complete day-to-day tasks

5. To improve your skills or knowledge

6. For personal enjoyment / interest

7. Because you were encouraged to by a family member / friend

8. Because you were encouraged to by an employer

9. Because you were encouraged by a Jobcentre Plus work coach

10. Because you were told you had to by a Jobcentre Plus work coach or you would lose some of your benefits

11. Because it was free

12. To help children with maths homework

13. To be able to support your child's education

14. To improve your parenting skills

15. To improve your skills and knowledge about maths

16. To improve your skills for your current job

17. To improve your employability

18. [DISPLAY TEXT OF REASON SPECIFIED AT QREASCOURSE = 18]

19. Don’t know

Unique questions at endline: Prep for Maths GCSE

QATTENDENCE How much of the Maths GCSE course did you attend?

1. I have attended all of the course

2. I have attended most of course

3. I have attended half of the course

4. I have attended some of the course

5. I have attended none of the course

QINCOMPLETEALL Why did you not attend all of the course?

1. Concerns about the cost of attending

2. Didn’t like what I was being taught

3. Did not like the way the course was delivered

4. Didn’t like the other people on the course

5. It was too difficult

6. It was too easy

7. I did not feel ready to sit the final exams

8. Not enough time or conflicted with other commitments

9. Lack of support from family

10. Lack of support from employer

11. Personal / family problems / ill health

12. Course no longer relevant to my job

13. Did not like tutor / teacher

14. Another reason

15. Don’t know

QSESSION1 Do you recall attending a session on growth mindset and resilience? In the session you may have discussed your maths journey so far and the Growth Zone.

1. Yes

2. No

QSESSION2 Do you recall attending a session on an introduction to GCSE Maths? In the session you may have discussed GCSE Maths topics and ratio tables.

1. Yes

2. No

QSESSION3 Do you recall attending a session on study skills? In the session you may have discussed direct proportion and how to study outside of lessons.

1. Yes

2. No

QSESSION4 Do you recall attending a session on using a calculator? In the session you may have discussed true or false questions about calculators and order of operations.

1. Yes

2. No

QSESSION5 Do you recall attending a session on using IT effectively? In the session you may have discussed college IT systems and using the internet for maths practice.

1. Yes

2. No

QSESSION6 Do you recall attending a session on revision techniques? In the session you may have discussed the blurting and pomodoro techniques. The blurting technique involved writing everything you know about a topic on a sheet of paper without using notes. The pomodoro technique is a time management tool where you set a timer for 25 minutes, work with full concentration for that time, and then have a 5 minute break and repeat.

1. Yes

2. No

QSESSION7 Do you recall attending a session on exam techniques? In the session you may have discussed how to approach the exam questions and tips for in the exam.

1. Yes

2. No

QSESSIONENGAGE How engaging did you find each of the sessions that you remember attending? By engaging, we mean that it held your interest and kept you feeling interested or involved.

a) Growth mindset and resilience including the growth zone model and maths mindset statements (ONLY SHOW IS QSESSION1=1)

b) Introduction to GCSE Maths including discussion of topics in GCSE Maths and ratio tables (ONLY SHOW IS QSESSION2=1)

c) Study skills including discussion of barriers to study and potential solutions (ONLY SHOW IS QSESSION3=1)

d) Using a calculator including calculator skills and using this for order of operations questions (ONLY SHOW IS QSESSION4=1)

e) Using IT effectively including how to use IT for maths practise (ONLY SHOW IS QSESSION5=1)

f) Revision techniques including blurting and pomodoro technique (ONLY SHOW IS QSESSION6=1)

g) Exam techniques including review of past papers (ONLY SHOW IS QSESSION7=1)

1. Very engaging

2. Fairly engaging

3. Neither engaging nor not engaging

4. Not very engaging

5. Not at all engaging

QSESSIONUSEFUL How useful did you find each of the sessions that you remember attending in preparing for the Maths GCSE exam?

a) Growth mindset and resilience (ONLY SHOW IS QSESSION1=1)

b) Introduction to GCSE Maths including discussion of topics in GCSE Maths and ratio tables (ONLY SHOW IS QSESSION2=1)

c) Study skills including discussion of barriers to study and potential solutions (ONLY SHOW IS QSESSION3=1)

d) Using a calculator including calculator skills and using this for order of operations questions (ONLY SHOW IS QSESSION4=1)

e) Using IT effectively including how to use IT for maths practise (ONLY SHOW IS QSESSION5=1)

f) Revision techniques including blurting and pomodoro technique (ONLY SHOW IS QSESSION6=1)

g) Exam techniques including review of past papers (ONLY SHOW IS QSESSION7=1)

1. Very useful

2. Fairly useful

3. Neither useful nor not useful

4. Not very useful

5. Not at all useful

QCONTROLSTUDYSKILLS Did your Maths GCSE course include any sessions dedicated to covering any of the following topics? Select all that apply.

1. Growth mindset and resilience

2. Introduction to GCSE Maths

3. Study skills

4. Using a calculator

5. Using IT effectively

6. Revision techniques

7. Exam techniques

8. None of these

9. Don’t know

QCONTROLENGAGE How engaging did you find each of the sessions that you remember attending? By engaging, we mean that it held your interest and kept you feeling interested or involved.

a) Growth mindset and resilience (ONLY SHOW IS QCONTROLSTUDYSKILLS=1)

b) Introduction to GCSE Maths (ONLY SHOW IS QCONTROLSTUDYSKILLS=2)

c) Study skills (ONLY SHOW IS QCONTROLSTUDYSKILLS=3)

d) Using a calculator (ONLY SHOW IS QCONTROLSTUDYSKILLS=4)

e) Using IT effectively (ONLY SHOW IS QCONTROLSTUDYSKILLS=5)

f) Revision techniques (ONLY SHOW IS QCONTROLSTUDYSKILLS=6)

g) Exam techniques (ONLY SHOW IS QCONTROLSTUDYSKILLS=7)

1. Very engaging

2. Fairly engaging

3. Neither engaging nor not engaging

4. Not very engaging

5. Not at all engaging

QCONTROLUSEFUL How useful did you find each of the sessions that you remember attending in preparing for the Maths GCSE exam?

a) Growth mindset and resilience (ONLY SHOW IS QCONTROLSTUDYSKILLS=1)

b) Introduction to GCSE Maths (ONLY SHOW IS QCONTROLSTUDYSKILLS=2)

c) Study skills (ONLY SHOW IS QCONTROLSTUDYSKILLS=3)

d) Using a calculator (ONLY SHOW IS QCONTROLSTUDYSKILLS=4)

e) Using IT effectively (ONLY SHOW IS QCONTROLSTUDYSKILLS=5)

f) Revision techniques (ONLY SHOW IS QCONTROLSTUDYSKILLS=6)

g) Exam techniques (ONLY SHOW IS QCONTROLSTUDYSKILLS=7)

1. Very useful

2. Fairly useful

3. Neither useful nor not useful

4. Not very useful

5. Not at all useful

QPREPEXAM How prepared did/do you feel for the Maths GCSE exam?

1. Very prepared

2. Fairly prepared

3. Neither prepared nor not prepared

4. Not very prepared

5. Not at all prepared

QPREPHELP Which of the following has helped you to feel prepared for the Maths GCSE exam?

1. The maths content covered on the GCSE course

2. Study skills sessions delivered as part of the course

3. Revision sessions delivered as part of the course

4. My own revision

5. Support from my tutor

6. Support from family and friends

7. Support from others on the course

8. Online resources

9. Something else

10. None of these

11. Don’t know

QCOURSESATISFACTION Overall, how satisfied or dissatisfied were you with the Maths GCSE course?

1. Very satisfied

2. Fairly satisfied

3. Neither satisfied nor dissatisfied

4. Fairly dissatisfied

5. Very dissatisfied

6. Don’t know

QTRIALAWARENESS Firstly, were you aware you were taking part in a research trial?

1. Yes, I was aware I was taking part in a trial

2. No, I wasn’t aware I was taking part in a trial

QTRIAL Thinking about your participation in this research trial, to what extent do you agree, or disagree, with the following…

a) I was happy to take part in a research trial

b) The information I was provided about the research trial was easy to understand

c) I tried harder on the course because it was part of a research trial

d) The surveys I completed asked questions that were relevant to me

e) I would recommend taking part in a research trial to other learners

1. Strongly agree

2. Tend to agree

3. Neither agree nor disagree

4. Tend to disagree

5. Strongly disagree

6. Don’t know

QTRIALSATISFACTION Overall, how satisfied or dissatisfied were you with the experience of taking part in a trial?

1. Very satisfied

2. Fairly satisfied

3. Neither satisfied nor dissatisfied

4. Fairly dissatisfied

5. Very dissatisfied

6. Don’t know

Repeated questions at baseline and endline: Prep for GCSE

QCONF Overall, how confident do you feel working with numbers in everyday life?

1. Very confident

2. Fairly confident

3. Neither confident nor not confident

4. Not very confident

5. Not at all confident

6. Not relevant to me

QNUMCONF How confident do you feel about doing the following things in everyday life?

a) Checking your change is right when you have bought something

b) Working out the best deals when shopping

c) Helping children with maths homework or talking about maths / numbers with children

d) Understanding interest rates on bank statements

e) Keeping track of your bank account balance

f) Working with numbers as part of a job

1. Very confident

2. Fairly confident

3. Neither confident nor not confident

4. Not very confident

5. Not at all confident

6. Not relevant to me

Annex 5: Code

Randomisation

```
*Loading provider data

use "$wd\providers_data.dta", clear

*setting the randomisation environment

version 17.0

isid LeadId, sort

set seed 109247

*generating random number for providers and ordering them from smallest to largest

gen random_number = uniform()

egen ordering = rank(random_number)

*assigning providers to treatment and control based on their ranks

gen group = 0

replace group = 1 if ordering <= _N/2

*saving and exporting final randmoisation file

save "$wd\randomised_providers.dta", replace
```

Intention to Treat (ITT) code

```
* 1. Adjusted Regression

quietly regress gcse_grade trial_group white_british disability imd_low_quintile female
ilr_age employed class_size prior_level1, vce(cluster providerid)

        local n_adj = e(N)

        matrix M = r(table)

* Get N by group for adjusted sample

        preserve
```

```
quietly regress gcse_grade trial_group white_british disability imd_low_quintile female
ilr_age employed class_size prior_level1, vce(cluster providerid)

        quietly count if e(sample) & trial_group == 0

        local n0_adj = r(N)

        quietly count if e(sample) & trial_group == 1

        local n1_adj = r(N)

        restore

* Robust Column Find

        local col_idx = colnumb(M, "trial_group")

        if `col_idx' == . local col_idx = 1

        local coef_adj = M[1, `col_idx']

        local se_adj   = M[2, `col_idx']

        local p_adj    = M[4, `col_idx']

        local ci_l_adj = M[5, `col_idx']

        local ci_u_adj = M[6, `col_idx']

* 2. Adjusted Cohen's d

* Formula: Adjusted Coefficient / Raw Pooled SD

local d_adj = `coef_adj' / `pooled_sd'

display "Adjusted Coef: " %9.3f `coef_adj'

display "Adjusted d:    " %9.3f `d_adj'
```

CACE

```
*CACE ANALYSIS (IV REGRESSION)

* 1. Unadjusted Instrumental Variable Regression (2SLS)

* Instrument: trial_group (Random Assignment)
```

```
* Endogenous: treatment_received (Actual Receipt)
* Outcome: gcse_grade
display _newline "--- Unadjusted CACE ---"
ivregress 2sls gcse_grade (treatment_received = trial_group), vce(cluster providerid)
    local n_cace = e(N)
    matrix M = r(table)
* Get N by group for CACE
    quietly count if e(sample) & trial_group == 0
    local n0_cace = r(N)
    quietly count if e(sample) & trial_group == 1
    local n1_cace = r(N)
    * Extract CACE Results
    local coef_cace = M[1,1]
    local se_cace   = M[2,1]
    local p_cace    = M[4,1]
    local cil_cace  = M[5,1]
    local ciu_cace  = M[6,1]
  display "Unadjusted CACE Estimate: " %9.3f `coef_cace' " (SE: " %9.3f `se_cace' ")"
post `memhold' ("CACE Unadjusted") (`coef_cace') (`se_cace') (`p_cace') (`cil_cace')
(`ciu_cace') ("IV Estimate") (`n_cace') (`n0_cace') (`n1_cace')
* 2. Adjusted Instrumental Variable Regression (2SLS)
* Same specification with covariates matching ITT adjusted model
display _newline "--- Adjusted CACE ---"
ivregress 2sls gcse_grade female ilr_age white_british disability employed prior_level1
imd_low_quintile class_size (treatment_received = trial_group), vce(cluster providerid)
```

```
    local n_cace_adj = e(N)
    matrix M_adj = r(table)
    * Get N by group for Adjusted CACE
    quietly count if e(sample) & trial_group == 0
    local n0_cace_adj = r(N)
    quietly count if e(sample) & trial_group == 1
    local n1_cace_adj = r(N)
 * Extract Adjusted CACE Results
    local coef_cace_adj = M_adj[1,1]
    local se_cace_adj   = M_adj[2,1]
    local p_cace_adj    = M_adj[4,1]
    local cil_cace_adj  = M_adj[5,1]
    local ciu_cace_adj  = M_adj[6,1]
display "Adjusted CACE Estimate: " %9.3f `coef_cace_adj' " (SE: " %9.3f `se_cace_adj' ")"
```

Sub-group analysis code

```
display " SUBGROUP ANALYSIS"
* ANALYSIS LOOP
local subgroups "ilr_female employed prior_level1 age_group imd_low_quintile"
capture postclose sub_hold
tempname sub_hold
tempfile sub_results
postfile `sub_hold' str50 subgroup str50 level double coef double se double p_val ///
double ci_low double ci_high double n_obs double p_interaction using `sub_results', replace
```

```
foreach var of local subgroups {


display _newline "--- Processing Subgroup: `var' ---"
capture confirm variable `var'
    if _rc == 0 {
        quietly tab `var'
        local n_levels = r(r) // Count how many levels (e.g., 2)
        if `n_levels' > 1 {
    * A. Run Interaction Model
            quietly regress gcse_grade i.trial_group##i.`var', vce(cluster providerid)
    * B. Test Interaction
            capture test 1.trial_group#1.`var'
            local p_inter = cond(_rc==0, r(p), .)
    * C. Calculate Margins
            quietly margins `var', dydx(trial_group) post
            matrix M = r(table)
      * D. EXTRACT RESULTS (FIXED OFFSET)
      * Stata puts the reference (0) in the first N columns,
      * and the effects in the next N columns.
      * We start our index at (n_levels + 1).
       local col_idx = `n_levels' + 1
       levelsof `var', local(levels)
            foreach l of local levels {
       * Extract from the correct column (3 or 4)
```

```
            local coef = M[1, `col_idx']
            local se   = M[2, `col_idx']
            local p    = M[4, `col_idx']
            local cil  = M[5, `col_idx']
            local ciu  = M[6, `col_idx']
            * Get N
            quietly count if `var' == `l' & e(sample)
            local n_obs = r(N)
            * Get Label
            local lbl : label (`var') `l'
            if "`lbl'"==""  | "`lbl'"=="`l'" local lbl "Level `l'"
            * Post
            post `sub_hold' ("`var'") ("`lbl'") (`coef') (`se') (`p') (`cil') (`ciu') (`n_obs')
(`p_inter')
            local ++col_idx
          }
        }
    }
}
postclose `sub_hold'
```

Annex 6: Fields in Ipsos Data Portal

Table 21: Learner data fields

Field	Was the field compulsory? (Control)	Was the field compulsory? (Treatment)
Learner reference number	No	No
Unique Learner Number	No	No
Title	No	No
Firstname	Yes	Yes
Surname	Yes	Yes
Date of Birth (DD/MM/YYY)	Yes	Yes
Telephone number 1	Yes	Yes
Telephone number 2	No	No
Postcode	Yes	Yes
Course Start Date (DD/MM/YYYY)	Yes	Yes
Course End Date (DD/MM/YYYY)	Yes	Yes
Consent for their data to be used in the trial?	Data only accepted if Yes selected for both consent options	Data only accepted if Yes selected for both consent options
Consent to be contacted for primary data collection?	Data only accepted if Yes selected for both consent options	Data only accepted if Yes selected for both consent options
Attendance data: Session 1 (Growth Mindset and Resilience) (Attended all/Attended part/Did not attend)	[Z]	No[67]

[67] All attendance data fields were not a compulsory field because at the time of the initial upload including learners personal details, delivery had not begun and so these fields could not be completed.

Field	Was the field compulsory? (Control)	Was the field compulsory? (Treatment)
Attendance data: Session 2 (An Introduction to GCSE Maths) (Attended all/Attended part/Did not attend)	[Z]	No
Attendance data: Session 3 (Study Skills) (Attended all/Attended part/Did not attend)	[Z]	No
Attendance data: Session 4 (Using a calculator) (Attended all/Attended part/Did not attend)	[Z]	No
Attendance data: Session 5 (Using IT) (Attended all/Attended part/Did not attend)	[Z]	No
Attendance data: Session 6 (Revision techniques) (Attended all/Attended part/Did not attend)	[Z]	No
Attendance data: Session 7 (Exam techniques) (Attended all/Attended part/Did not attend)	[Z]	No

Source: Ipsos

Note: [z] refers to ‘not applicable’

Table 22: Tutor data fields

Field	Was the field compulsory? (Control)	Was the field compulsory? (Treatment[68])
Title	No	[Z]
Firstname	Yes	[Z]
Surname	Yes	[Z]
Email	Yes	[Z]
Telephone number 1	Yes	[Z]
Telephone number 2	No	[Z]
Was this session delivered (Yes/No/Don't Know/Not Yet/Not applicable)	[Z]	Yes
If delivered: What date was this session delivered (DD/MM/YYYY)	[Z]	Yes
If delivered: How much of the content of the session was delivered? (All/More than half but not all/Less than half/None/Don't know)	[Z]	Yes
If delivered: What was the name of the tutor who delivered this session?	[Z]	Yes

Source: Ipsos

Note: [z] refers to 'not applicable'

[68] Personal data was not collected for the treatment group tutors via the Ipsos Data Portal. It was collected when they attended the online tutor training.

Annex 7: Sample size and estimation parameters achieved

Table 22 shows that the trial began with just over 1,000 learners across 31 providers at baseline, but the final matched dataset was smaller due to attrition at both provider and student level. Student-level attrition was low overall at 3.5% for the primary outcome, though it was higher in the treatment group than the control group. Attrition was much higher for the confidence outcome at 58%, reflecting the challenges of collecting survey data at endline.

The intracluster correlation was 0.13, which was higher than expected. This greatly reduced statistical power. As a result, the minimum detectable effect size was approximately 0.43 SD, meaning the trial could only detect large effects.

Table 23: Sample size and estimation parameters

Element	Description
Number of clusters and participants at baseline and endline	Baseline (Ipsos Data Portal): 31 Providers; 1,055 Learners (737 Control, 318 Treatment) Endline (final matched dataset): 25 Providers; 1021 Learners (716 Control, 305 Treatment) for primary outcome analysis.
ICC achieved	Estimated at 0.13 for the primary outcome.
Minimum detectable effect size (achieved)	0.43 SD (approx. 0.88 grade points) on the primary outcome.
Attrition rates -Student level (achieved)	Primary Outcome (GCSE Grade): 3.5% Overall. (Control: 0.4% / Treatment: 10.6%) Secondary Outcome (Level 2 Pass): 3.5% Overall. (Control: 0.4% / Treatment: 10.6%) Secondary Outcome (Course Completion): 2.7% Overall. (Control: 1.8% / Treatment: 4.8%) Secondary Outcome (Confidence): 58.3% Overall (Control: 55.5% / Treatment: 64.6%)
Attrition- Provider level	19.4% Overall (Control: 18.8% / Treatment: 20.0%

Source: Ipsos learner surveys, Provider administrative data and ILR outcome data

Annex 8: Data clustering

As is common in educational studies[69], learners at the same provider tended to have similar outcomes. The analysis confirmed that the specific provider a learner attended had a strong influence on their results, meaning that some providers naturally had higher average grades than others, regardless of the intervention. To ensure the findings were accurate and not skewed by these pre-existing differences, the statistical calculations were adjusted to account for this "provider effect."

Table 24: Intracluster Correlation Coefficients (ICC) by outcome

Outcome	N	Empty Model ICC	Conditional ICC	Interpretation
GCSE Grade (Primary)	985	0.14	0.13	High Clustering: Approximately 13-14% of the variation in grades is explained by the provider.
Level 2 Pass (Secondary)	1,021	0.17	0.15	High Clustering: The provider explains between 15% and 17% of the variance in pass rates.
Course Completion (Secondary)	997	0.04	0.02	Low clustering: Completion is largely independent of the provider, with only 2-4% of variance explained at the cluster level.
Maths Confidence (Secondary)	424	0.01	0.00	Negligible Clustering: Less than 1% of the variation in confidence is explained by the provider, with clustering disappearing entirely after baseline adjustments.[70]

Source: ILR outcome data

Note: ICC estimates derived from *Mixed Effects models. "Null ICC" represents clustering in the raw data; "Conditional ICC" represents clustering remaining after adjusting for student covariates.*

[69] See Hedges, L. V., & Hedberg, E. C. (2007). Intraclass correlation values for planning group-randomized trials in education. *Educational Evaluation and Policy Analysis*, 29(1), 60-87

[70] To estimate the conditional ICC all outcomes were adjusted by the same key demographics detailed before (using regression) and by baseline measures of the outcome when available.

Annex 9: Subgroup analysis

Table 25: Sub-group impact estimates (primary outcome)

Subgroup	Level	Coefficient	Std. Error (SE)	P-value	95% Confidence Interval	Interaction P-value	Interpretation
Gender	Male (Ref)	0.08	0.36	0.828	[-0.67, 0.83]	0.76	No difference in effect between men and women.
Gender	Female	-0.01	0.31	0.983	[-0.65, 0.64]	-	-
Employment	Not Employed (Ref)	-0.02	0.34	0.964	[-0.71, 0.68]	0.75	No difference between employed and unemployed learners.
Employment	Employed	0.1	0.38	0.791	[-0.68, 0.88]	-	-
Prior Attainment	No Level 1 (Ref)	0.03	0.39	0.948	[-0.77, 0.82]	0.24	No difference based on prior qualification levels.
Prior Attainment	Level 1	0.54	0.4	0.188	[-0.28, 1.36]	-	-
Age	Below Median (Ref)	-0.02	0.28	0.944	[-0.61, 0.57]	0.71	No difference between younger and older learners.
Age	Above Median	0.15	0.41	0.713	[-0.70, 1.00]	-	-
Index of Multiple Deprivation	Not Low Quintile (Ref)	0.08	0.39	0.838	[-0.72, 0.89]	0.88	No difference based on deprivation level.

Subgroup	Level	Coefficient	Std. Error (SE)	P-value	95% Confidence Interval	Interaction P-value	Interpretation
Index of Multiple Deprivation	Low Quintile	0.03	0.32	0.935	[-0.64, 0.70]	-	-

Source: Ipsos STATA analysis

Notes: None of the impact estimates are statistically significant

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