Department for Education

Adult numeracy randomised controlled trials: Family numeracy

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) and Implementation and Process Evaluation (IPE) of a Family Numeracy (FN) intervention. The study was funded by the Department for Education (DfE) as part of a programme of Adult Numeracy Trials delivered through the Multiply programme. The trial compared the intervention to Business-As-Usual (BAU), for which individuals were put on a waitlist for the FN intervention. BAU may, or may not, have included activities by teachers, providers and local authorities seeking to encourage learners to enrol onto Further Education (FE) courses. The primary outcome for the pilot RCT was progression of parents/carers of Key Stage 1 Year 2 children to further maths courses. Secondary outcomes included parents'/carers' confidence in maths, progression to other courses (including qualification-bearing maths courses at any level, Level 2 qualification-bearing maths courses, Level 2 qualification-bearing courses of any type, and any further learning) and child's maths attainment. The IPE explored compliance, attrition, fidelity, engagement, feasibility, perceived outcomes, trial readiness and barriers and enablers to delivery. As a pilot, this study provided a small-scale investigation into the feasibility of implementing family learning trials and measuring relevant outcomes.

Key findings

A total of 22 treatment group parents/carers (10%) progressed to a further maths course, compared to none in the control group. This translates to an estimated 18 percentage point higher likelihood of progression attributable to the treatment, after controlling for demographic characteristics, provider effects and school-level factors. The pilot trial found that this effect was statistically significant at the 99% confidence level[1] on parent/carer progression to further maths courses (the primary outcome). The effect size was relatively large compared to other education trials, which may reflect the low probability of parent/carer progression to further maths courses without an intervention.

This effect was stronger among the 34% parents/carers who completed the minimum dosage of at least 3 sessions and 3 homework sessions which was defined as the level of attendance and homework that the product developer considered necessary to achieve parent/carer outcomes. The treatment effect was higher by 45 percentage points and statistically significant ($p<0.001$) for parents/carers who complied with the

[1] A statistically significant effect falls outside the margin of error and is therefore unlikely due to chance alone. Results at the 99% confidence level provide stronger evidence than the standard 95% level as they meet more stringent criteria. At 99% confidence, researchers can be 99% certain the findings reflect a true effect, with only a 1% chance the observed difference is due to random variation. At the 95% confidence level, this probability increases to 5%.

minimum dosage. This means that parents/carers who fully engaged with the intervention showed notably higher outcomes than those who did not.

Outcomes varied significantly across providers, highlighting their role in shaping delivery and learner experience. During interviews, FN tutors reported that they had signposted parents/carers to other courses offered by their organisations, with many parents/carers expressing interest in further learning opportunities. The correlation between impact on progression among parents/carers participating in FN in the same school was also notable, suggesting that school-level factors influenced outcomes to a certain extent.

There were 18 parents/carers who signed up to the trial post-randomisation. These individuals were potentially more highly motivated or had different characteristics from the randomised sample. However, adjusted estimates from sensitivity analysis showed that the impact on parent/carer progression to further maths courses (primary outcome) was robust and not driven by this group. There was no statistically significant impact on any of the secondary outcomes (parent/carer progression into any further course, parent/carer progression into any qualification bearing course, parent/carer progression into any qualification bearing maths course, parent/carer progression into any L2 qualification bearing maths course, parent/carer confidence in maths, child's maths attainment).

The FN intervention was delivered in line with product developer guidance (i.e. with fidelity) and needed only minor adjustments to session length and content to meet the needs of parents/carers. It proved feasible for delivery within schools by adult education providers, and parents/carers found the sessions and support to be readily accessible.

Tutors attended all or most of the pre-delivery training (known as compliance) and found it to be accessible and efficient. They reported increased knowledge and confidence in delivering family learning courses and improved understanding of the Key Stage 1 maths curriculum. The product developers specified that parents/carers would need to attend at least 50% of the sessions and complete at least 50% of the home learning tasks for the intervention to be effective. Just over a third achieved this level of compliance, with others affected by obstacles in their personal circumstances, such as childcare or other caring responsibilities.

Parents/carers reported more positive attitudes towards maths and felt better equipped to support their children's learning, both of which motivated them to consider enrolling in further maths courses. Treatment group engagement increased between baseline and endline. Additionally, school staff observed improvements in parent/carer engagement with both children's learning and the school more broadly.

Overall, the intervention worked well within school settings and was delivered with high fidelity. Data collection proceeded as planned, demonstrating the feasibility of

scaling up to a full trial. Recommendations for future delivery include using clearer, simpler language in recruitment materials to improve parent/carer take-up and allowing more time for recruitment.

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.

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.

FN was designed to reduce barriers to parent/carer participation in adult maths learning by relating maths content to their children's Key Stage 1 Year 2 curriculum and delivering it in primary schools, a familiar and safe environment for parents/carers. The intervention enabled parents/carers to develop their own maths skills while learning how to support their children as they transitioned to more challenging maths in Key Stage 2. This trial examined the impact of family learning on parent/carer maths confidence, parent/carer progression to further maths courses and children's maths attainment. FN was evaluated through a pilot RCT as part of the Department for Education (DfE) Adult Numeracy Trials programme, which aimed to test approaches to improving adult numeracy.

Intervention

FN consisted of 6 in-person learning sessions in primary schools which parents/carers and their children attended, aiming to develop both numeracy skills and family learning. Parents/carers attended the entire duration of each course session, and children were brought into the second half of sessions. There were also

6 homework sessions that parents/carers had to complete. FN was delivered to the treatment group in spring/summer 2025. The course was designed for parents/carers aged 19 and over whose children were in Key Stage 1 Year 2. Eligible parents/carers either did not have a Level 2 qualification in maths or functional maths or had low maths confidence despite holding such a qualification. The trial used a waitlist control group design to help with recruitment and ensure fairness, with control group courses delivered from October 2025.

Methodology and process

The **primary research question** was: What is the average difference in progression to other maths courses (binary outcome yes/no), of parents/carers in schools that receive the Family Numeracy intervention, in comparison to parents/carers in control schools who are on waitlist to receive the intervention in Autumn 2025?

The primary outcome of interest for this trial was: Progression to further maths courses (assessed using Individual Learner Record (ILR) data).[2]

Secondary research questions examined parent/carer confidence in maths, child maths attainment and parent/carer progression to various types of further learning. Accordingly, secondary outcomes covered parent/carer confidence in maths; progression to any courses; progression to any qualification-bearing courses; progression to any qualification-bearing maths courses; progression to any Level 2 qualification-bearing maths courses and child maths attainment. The IPE examined compliance, attrition, fidelity, feasibility, trial readiness and perceived outcomes. It also explored the feasibility of delivering RCTs in family learning settings.

The impact of the FN course was tested using a 2-arm cluster-randomised controlled trial. Schools were randomised to either treatment or waitlist control groups, while outcomes were measured at the individual level for parents/carers and children. Randomisation was stratified by provider, to ensure each had an even split of treatment and waitlist control schools.

Initially, 197 schools signed Memoranda of Understanding (MoU) to recruit parents/carers and host the delivery. However, 125 schools withdrew before randomisation, with the main reasons being they were not able to match up with a local adult education provider and low interest amongst parents and carers. Following parent/carer recruitment, 72 schools with 431 eligible parents/carers were randomised in early April 2025: 37 schools (228 parents/carers) were allocated to

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

treatment and 35 schools (203 parents/carers) to control. Recruitment continued post-randomisation to ensure all interested parents/carers could enrol.

After further withdrawals and late recruitment, the final sample comprised 60 schools delivering FN through 24 adult education providers, with 421 eligible parents/carers participating (222 in the treatment group, 199 in the waitlist control group).

Primary and secondary outcomes were measured using a variety of data sources. Progression to further courses was assessed using ILR data matched via Learner Reference Numbers 6 months after the delivery of the intervention began. Control group participants were similarly tracked in the ILR using their personal identifiers. Parent/carer confidence in maths was measured through surveys at baseline and endline. Child maths attainment was measured using teacher-assessed grades at baseline and endline.

Following the trial feasibility assessment in June 2023, the first trial protocol was registered in June 2024, with the second version released in June 2025. Recruitment of providers, schools, and parents/carers took place concurrently between May 2024 and February 2025. Following randomisation in March 2025, the intervention was delivered to the treatment group from April to July 2025. Data collection included baseline surveys in April 2025, IPE fieldwork from May to July 2025, and endline surveys in July 2025. Outcome testing in the ILR took place from November 2025 to February 2026.

Impact findings

Primary outcome (progression to further maths course)
A total of 22 treatment group parents/carers (10%) progressed to a further maths course, compared to none in the control group. These courses were non-regulated, entry level or pre-entry level courses. This difference was statistically significant at the 99% confidence level (p=0.003)[3], representing an estimated 18 ppt increase in the probability of progression attributable to the intervention. Given the zero progression in the control group, this represents a substantial effect on course take-up[4].

The impact varied significantly by provider, indicating that providers played a critical role in facilitating progression. This was evident from the high correlation in outcomes among parents/carers within the same school. Interviews revealed that FN

[3] 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.
[4] The effect size is 1.16 standard deviation, which can be considered as a large effect in educational outcomes.

tutors actively signposted parents/carers to other courses offered by their organisations, with several parents/carers expressing interest in these opportunities.

Secondary outcomes
There was no statistically significant effect on any of the secondary outcomes.

Compliance-adjusted analysis
Of the 222 parents/carers in the treatment group, 76 (34%) attended at least half the sessions and undertook at least half the home learning activities. This met the minimum threshold (or dosage) the product developer considered necessary for effectiveness. When analysis was adjusted for compliance with this minimum dosage, the treatment effect increased by 45 ppt and remained statistically significant ($p<0.001$). This means that parents/carers who fully engaged with the intervention showed notably higher predicted outcomes than those who did not.

Subgroup analysis
Exploratory analysis found no evidence that the treatment effect varied by parent/carer demographic characteristics. The impact of the intervention was consistent regardless of parents'/carers' sex, ill-health status, employment status, area-level deprivation, or age group. Simply put, the intervention was equally effective across all demographic groups examined.

Implementation and process findings

- **Compliance:** Providers submitted the required data to the Ipsos Data Portal and the data were of high quality and complete. Tutors showed high compliance with training requirements. Parents/carers were considered compliant if they attended at least 50% of sessions and completed at least 50% of home learning tasks and around a third achieved this threshold.
- **Attrition:** A total of 51 providers and 264 schools withdrew from the FN trial. Most withdrawals occurred prior to randomisation and therefore do not constitute formal trial attrition. The most common reasons were insufficient parents/carers enrolment and school withdrawals.
- **Fidelity:** The intervention was delivered on schedule with all planned sessions completed. Minor adjustments were made to session length and content to meet the needs of parents/carers and children.
- **Feasibility:** FN delivery proved feasible with the intervention being well received. Tutors reported positive experiences, noting that parents/carers and children typically engaged well. Training and support were easily accessible.
- **Readiness for trial:** The pilot demonstrated scalability for a full efficacy trial. The intervention worked well in school settings and required data collection was

achievable. Recommendations for future delivery include using simpler recruitment materials and language to improve parent/carer take-up and allowing longer for recruitment.

- **Perceived outcomes:**
    - Parents/carers reported increased confidence in their ability to use maths and more positive attitudes towards the subject. They felt better prepared to support their children's maths learning. These improvements motivated them to consider enrolling in further maths courses.
    - Tutors reported increased knowledge and confidence in delivering family learning courses and improved understanding of the Key Stage 1 maths curriculum. They suggested that adapting the FN approach for other Key Stages would be valuable.
    - Schools reported increased parental/carer engagement with both children's learning and the school community. This enhanced engagement prompted school staff to express interest in continuing working with the FN providers.

Conclusions and recommendations

Responses to the FN intervention were very positive and it achieved many of its intended outcomes. The evaluation demonstrated that parents/carers in the treatment group were significantly more likely to progress to further maths courses than those in the control group. Participating in at least half the sessions and completing at least half the home learning activities significantly increased progression rates, with providers playing an important role in driving this. Parents/carers developed more positive attitudes towards maths and felt better prepared to support their children's maths learning. Tutors gained improved knowledge of Key Stage 1 maths and relationship to adult numeracy skills. Schools reported increased levels of parent/carer engagement and expressed interest in continuing family learning programmes.

The intervention demonstrated strong trial readiness and could be delivered at a larger scale. Successful scale-up will require additional support and time for schools to recruit parents/carers effectively.

Limitations and lessons learned

As a pilot RCT, the sample size was small leading to limited statistical power, which means the effects identified cannot be generalised to broader populations and the effect size comes with a wide confidence interval, indicating large variation observed

within a small sample size. The evaluation nonetheless identified useful learning about delivering family learning trials, such as the importance of timely communication with schools and parents/carers throughout the trial process.

Providers were motivated to take part by the potential to establish the impact of family learning and to build and sustain relationships with schools. Tutors were particularly positive about delivering FN, finding the combined learning approach with parents/carers and children in school settings to be a unique benefit to the intervention. Similarly, parent/carers responded positively to the FN and especially appreciated the time to engage with their children in the sessions.

It is important to note that the results were verified using multiple statistical techniques and the consistency is the positive and statistically significant result across different approaches provide strong confidence that the positive treatment effect did not happen by chance. Although the caveat of low statistical precision remains since the control group success rate was 0% which might have affected the prediction of the impact estimates, there is enough evidence to suggest that the positive treatment effect did not happen by chance. However, a full-scale powered RCT is required to more precisely estimate the effect size.

Implications/recommendations

Further research is recommended to more precisely determine the impact of FN, and how this impact varies between different subgroups, using a fully powered trial. The current evaluation offers several important implications for future practice.

Identification of parents/carers who meet the eligibility criteria for FN could provide valuable insights for schools, helping teachers and senior leadership teams understand which children may receive limited support for maths learning at home. This information could help schools enhance their inclusion strategies and address hidden disadvantage affecting children's maths achievement. Delivering the FN sessions in school settings proved particularly effective, as it allowed parents/carers and children to interact in a familiar environment, thereby reducing potential learning or maths anxiety. Linking providers with schools for FN enabled providers to establish meaningful relationships with schools, creating opportunities for future collaboration.

Considerations for future research

Additional support to schools during outreach and recruitment of parents/carers would be beneficial for improving take-up and minimising attrition. For example, involving adult education providers in the recruitment of parents/carers would help reduce the administrative burden on school staff. Furthermore, simplifying the

recruitment materials and using plainer language could remove participation barriers, particularly for parents/carers with English as an additional language.

In preparation for a larger-scale trial, several adaptations could enhance delivery. Extending session length and allowing more flexibility to tailor content to align more closely with schools' maths curriculum and children's varying abilities could prove valuable, though clear boundaries for such flexibility would need to be established. There is also potential to explore additional delivery modes, such as live Zoom sessions, which would enable parents/carers who work full-time or have ill-health or carer responsibilities to participate. This approach could offer more flexible scheduling options and potentially reduce attrition.

A fully powered trial with a cluster-randomisation design would require approximately 410 schools assuming a small effect size. As it requires less than 5% of eligible primary schools across England to participate, it is considered feasible. However, successful implementation would also depend on recruiting sufficient adult learning providers near participating schools.

Finally, this 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 Family Numeracy (FN). FN drew on existing family learning models, bringing adult education tutors into school settings. It aimed to improve parents'/carers' likelihood of progressing to further study and boost their confidence with maths, as well as targeting improvements in children's attainment. The evaluation was delivered as a waitlist randomised controlled trial (RCT). The trial included 32 providers, 60 schools and 421 eligible parents/carers. Of these, 222 were allocated to the treatment group and 199 to the waitlist control group.

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 had declined in the decade prior to Multiply (Department for Education, 2020). In 2020, the House of Commons Education Committee reported that in England, 9 million adults had low numeracy or literacy skills, and 6 million adults did not have level 2 qualifications (which are equivalent to GCSE) (House of Commons Education Committee, 2020). This trial sought to

contribute evidence on family learning as a vehicle to engage adult learners in maths. The key attraction for parents/carers was the opportunity to support their child's maths learning at Key Stage 1.

Research has shown that family learning, where parents/carers and children learn together in a relaxed environment (often primary schools), can improve parents' and carers' skills and support their progression into further study, by providing an entry point into formal adult learning in a relaxed environment (National Institute of Adult Continuing Education, 2013). Benefits for parents/carers may also translate into benefits for children: evidence summarised by Campaign for Learning (CfL) suggests parental attainment has a stronger-than-average impact on children's literacy and numeracy proficiency in England and Northern Ireland, even after accounting for demographic and socioeconomic factors such as age, gender, and occupation (Cassen and Kingdom, 2012). Complementing this, Horne and Haggart (2004) assert that improved parental confidence in education in general can positively impact their attitudes to learning, engagement in their children's education, and their own ambitions and prospects.

In relation to numeracy specifically, CfL summarises evidence indicating that positive attitudes towards maths are associated with greater enjoyment and success in the subject (Emerson, et al., 2012). However, families may need support to overcome anxiety and avoidance (Berkowitz et al., 2015). This suggests family numeracy programmes may need to address parents' and carers' motivation, perception, and sentiment regarding maths as well as mathematical content.

Although there are positive findings from some family numeracy studies (e.g. (Jackie Ashton, 2011); (Estyn, 2012); (National Numeracy, 2025)), the majority of the family learning literature focuses on literacy rather than numeracy. Furthermore, prior to this study, there had been no trial of family numeracy intervention in the UK.

1.1.3 Rationale

This trial aimed to add to the body of knowledge on family learning by focusing on parental outcomes in a family numeracy intervention in the UK. It sought to test whether a family learning approach for maths would increase parent/carer progression to further maths learning and their confidence in maths.

1.2 Intervention

The FN intervention aimed to improve parents'/carers' maths confidence and increase their likelihood of progressing to more formal maths learning. It did this by bringing adult education tutors into primary school settings to deliver informal maths

learning to help parents/carers support their child's maths learning. Maths was aligned to Key Stage 1 Year 2, and Functional Skills Maths Level 1.

The Theory of Change envisaged that financial input and FN resources (inputs) would facilitate recruitment of parents/carers and tutors, as well as training of tutors (activities). These activities would enable delivery of 6 family learning course sessions and associated home-learning activities (outputs).

The aim was for these course sessions and home learning activities to create low-pressure environments for parents/carers to engage with maths learning. This would motivate parents/carers to develop their own skills and be more engaged with their child's education as they transition to more difficult maths curricula in Key Stage 2. In turn, children would become more motivated and confident in their maths learning (change mechanisms). As a result, parents/carers would better understand maths concepts, grow in confidence and ability to use maths in everyday life and recognise the value of maths. In turn, this would contribute to an improvement in their child's maths attainment and confidence in maths (outcomes). In the medium-term, parents/carers would be sufficiently motivated and confident to progress to further study, measured in terms of further maths study and further study in any subject. Alongside, parents/carers would become more confident to engage with their child's school and children would show increased progress against Key Stage 1 (outcomes).

The ultimate intended, long-term impacts of this intervention were to:

- Improve adult functional numeracy through family learning settings
- Improve parents'/carers' career progression and earning prospects, contributing to a more skilled workforce; and
- Overcome intergenerational cycles of anxiety by enabling parents/carers to engage with their children's education.

These would not be measurable in the trial period.

This theory of change is summarised in Table 1.

Table 1: Theory of Change

Situation	There is longstanding policy interest in improving levels of adult numeracy in the UK population. Barriers to adult education include maths anxiety and low confidence.	**Aims**	FN aimed to boost parents'/carers' progression onto further study, improve their confidence in maths and expand or progress their workplace numeracy use. It also aimed to improve children's progression in formal education

Inputs and activities	Outputs	Change mechanisms	Outcomes	Impacts
Inputs • Financial resource • Instructional videos and resources • Home learning activity resources **Activities** • Recruitment of parents/ carers • Recruitment of tutors and teachers • Tutor training • 6 course sessions covering the following topics: 'Number', 'Shape, Space and Measure' and 'Statistics'	• No. tutors recruited • No. Parents/carers recruited • No. Training sessions completed • No. workshops delivered in school settings (2 each on 'Number', 'Shape, Space and Measure' and 'Statistics') • No. home learning activities assigned and completed	• Low-pressure learning environments facilitate learner engagement with maths content • Learning in a school context and opportunities to apply this at home motivate parents/carers to be involved with their child's education • Parental support gives children greater motivation and confidence in applying maths vocabulary, improving their comprehension • Collaboration and working with school to support the child's learning by parents and carers	**Short term** • Increased parent/carer confidence in maths • Improved parent/carer attitudes to maths • Increased use of maths vocabulary and concepts • Increased recognition of the value of maths in everyday lives • Improved child's maths confidence **Medium term** • Parent/carer progression onto other courses (maths or other) • Increase in neutral and positive attitude towards maths • Parent/carer increase in self-efficacy in the workplace • Confidence to talk with children's school about maths work and support their own child's maths studies • Increase in maths comprehension in topics of number, shape, space and measure and statistics by children	• **Improved functional numeracy** across parents/carers • **Improved parent/carer career progression** and earning prospects, contributing to a more effective workforce • **Overcoming intergenerational cycles** of maths anxiety

Evidence assessment	The intervention was informed by existing evidence of the value of family learning approaches for adults and children. Most studies have focused on literacy study rather than numeracy.

Assumptions	Parent/carer and child engagement in course sessions, completion of home learning tasks and completion of the 'our maths journey' journal that encourages reflection throughout the programme. Relationships between tutors and parents/carers are positive and this facilitates greater parent/carer engagement. Exposure to course sessions and opportunities to apply learning at home will lead to positive changes in parents'/carers' confidence and ability to support their children's maths learning as well as children's confidence in maths concepts.	**Possible unintended consequences**	Maths anxiety can be triggered when learning with parents/carers if the learning environment becomes tense or overly focused on performance, creating pressure that hinders the student's confidence and enjoyment of the subject. Positive and supportive parental involvement in math education can play a crucial role in alleviating such anxiety by fostering a comfortable learning atmosphere.

1.2 Intervention Description[5]

Name

Family Numeracy

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

Data indicate that participation and achievement in adult numeracy courses is low. This intervention sought to motivate parents/carers of children in Year 2 to take part in maths classes to be better able to support their child's maths learning as they transition to a new Key Stage. Participating in maths classes with their children would increase parents/carers' own confidence, willingness and interest to progress to more formal maths provision. They would also engage more with their child's maths learning and understand key terms for maths in Year 3. Little research had previously been conducted on the effect of family learning on adult numeracy and previous family learning interventions have been delivered by primary school teachers, rather than adult education tutors.

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

Who: Recipients of the intervention

The intended recipients were parents and carers aged 19+ who had a child in Key Stage 1 Year 2 and:

- Did not have a level 2 qualification in maths, or
- Did not have functional maths at Level 2, or
- Had a Level 2 qualification in maths but low confidence in maths

These parents/carers' children were also intended recipients.

What: Physical or informational materials used in the intervention

The training package that CfL designed for tutors involved lesson plans, training materials and instructional videos. They also contained home learning activities for tutors to provide parents/carers and children. Please see Appendix 2 for further information.

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

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

The FN course comprised 6 sessions of 60 minutes each, with 2 sessions each for 3 different content areas. Home learning activities each week aimed to reinforce session learning. Children attended the second half of each session.

In each session, FN tutors were encouraged to signpost parents and carers to local course offerings and highlight how the FN content is embedded within daily life.

Appendix 2 provides information regarding the informational session held for providers and senior leaders, the briefing session held for schools and training for tutors.

Who: Intervention providers/implementers

CfL, a UK-based charity and the national Centre for Family Learning developed the FN intervention. CfL encourages learning throughout life. FN builds on the Maths on Toast[6] approach and includes information about additional maths learning.

Etio, the Managed Service Supplier (MSS) recruited adult education provider organisations and schools.

Adult education providers facilitated tutors who delivered the intervention. The MSS led a national campaign to recruit schools and matched them to local providers.

CfL contributed to delivery by providing training to tutors to ensure product quality and delivery. CfL also provided tutors with instructional videos. Training involved a 2.5-hour session on how to deliver FN classes prior to the start of the 2025 summer term.

How: Mode of delivery

The intervention was delivered in-person by adult education tutors in primary schools. Course sessions were accompanied by home learning activities designed by CfL and set by tutors. In this trial, there was an average of 7 parents/carers per school.

Where: Location of the intervention

Lessons were delivered in primary school settings across England.

When and how much: duration and dosage of the intervention

The minimum participation threshold for parents/carers to be considered “compliant” was attendance in at least 50% of sessions and completion of at least 50% of the home learning tasks. It did not matter which sessions or tasks were completed.

[6] The Maths on Toast approach had parents and children engaged in maths activities in a relaxed environment.

The intervention was delivered in summer term 2025 (between April and July 2025) and autumn term 2025 for the waitlist control group. The waitlist control group was not contacted about delivery of the FN intervention until the end of September 2025 to allow them to complete the endline survey without the forthcoming course influencing their responses. Delivery for waitlist control group began in October 2025.

Tailoring: Adaption of the intervention

The intervention was not designed to allow for any major variations but there was scope for tutors to embed some level of task variation where appropriate. This had to be recorded in the adaptation proforma. Tutors did make some adjustment to the session length and content to fit it to parents'/carers' and children's needs.

Modifications: Changes to the planned intervention

There were no modifications to the planned intervention.

Strategies to maximise effective implementation

Fidelity was assessed through the implementation and process evaluation (IPE), using the quantitative surveys and qualitative evidence from tutor and parent/carer interviews.

Evidence of implementation variability

The intervention was delivered with good overall fidelity; more information can be found in the IPE findings section.

1.3 Evaluation design/methodology

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

The focus of the impact evaluation was on testing whether the intervention achieved its intended outcomes. It used an experimental design to assess the causal effect of bringing adult education tutors to teach numeracy in primary school settings, adopting the principles of family learning. As part of a pilot RCT, the intervention was compared to Business as Usual (BAU), i.e. the control group, which included individuals who were put on a waitlist for the FN intervention. BAU may, or may not, have included activities by teachers, providers and local authorities seeking to encourage learners to enrol onto FE courses. 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 implementation and process evaluation (IPE) gathered evidence on the processes involved in delivery of the intervention including quality, relevance and suitability, as well as the experiences of providers and parents/carers in participating in a pilot RCT.

DfE commissioned the Institute for Employment Studies (IES) to deliver this evaluation and Ipsos UK to deliver the surveys.

1.3.1 Research questions

Impact evaluation

Primary research questions:

- What is the average difference in **progression to other maths courses** (binary outcome yes/no), of parents/carers in schools that receive the FN intervention, in comparison to parents/carers in control schools who are on waitlist to receive the intervention in Autumn 2025?

Secondary research questions:

- What is the average difference in **changes in confidence in maths**, measured by pre-and-post-course surveys, of parents/carers in schools that receive FN intervention, in comparison to parents/carers in control schools who are on waitlist to receive the intervention in Autumn 2025?
- What is the average difference in **maths attainment**, measured by teacher assessed grades, of children in schools that receive FN intervention, in comparison to parents/carers in control schools who are on waitlist to receive the intervention in Autumn 2025?
- What is the average difference in **progression to any further courses** (binary outcome yes/no), of parents/carers in schools that receive the FN intervention, in comparison to parents/carers in control schools who are on waitlist to receive the intervention in Autumn 2025?
- What is the average difference in progres**sion to any further qualification bearing courses** (binary outcome yes/no), of parents/carers in schools that receive the FN intervention, in comparison to parents/carers in control schools who are on waitlist to receive the intervention in Autumn 2025?
- What is the average difference in **progression to any further qualification bearing maths courses** (binary outcome yes/no), of parents/carers in schools

that receive the FN intervention, in comparison to parents/carers in control schools who are on waitlist to receive the intervention in Autumn 2025?

- What is the average difference in **progression to any further Level 2 qualification bearing maths courses** (binary outcome yes/no), of parents/carers in schools that receive the FN intervention, in comparison to parents/carers in control schools who are on waitlist to receive the intervention in Autumn 2025?

Implementation and process evaluation

Main IPE research questions[7]:

1. Has the intervention been delivered with fidelity (that is, in line with the intervention guidance)?
2. To what extent, if at all, do schools offer family learning sessions or support for parents/carers to understand the Key Stage 1 curriculum?
3. How do tutors experience delivering the intervention? How do schools and teaching staff respond to intervention delivery?
4. What are tutors' experiences of the training and support provided to deliver the intervention?
5. What are parents'/carers' experiences of the intervention?
6. What outcomes does the intervention have for parents/carers and children?
7. What enablers and barriers are there to parent and child engagement and participation in the intervention?
8. What lessons may be learned for future delivery of the intervention for a larger scale trial?

1.4 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 can be found in Appendix 1.

Further details about the intervention materials, costings, data collection tools used and additional data tables can be found in Appendices 2 – 6.

[7] The full set of IPE research questions and corresponding sub-questions are detailed in Appendix 4: Implementation and process evaluation research questions.

2. Methods

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

2.1 Impact evaluation

2.1.1 Trial overview/design

The study was a 2-armed cluster randomised pilot trial. Pilot RCTs are useful in developing an understanding of the feasibility, strengths and challenges of delivering a fully powered trial. They are usually statistically powered only to detect effect sizes that are unrealistically large with some level of certainty.

The sample size for the current trial was not expected to provide definitive evidence of the impact of the intervention or its effect size. However, it was expected to generate indicative evidence on trends, including the direction of any changes to observed outcomes, to inform the assumptions and conditions that would be required for a fully powered RCT. The pilot also aimed to assess overall feasibility of the trial, and test crucial trial elements such as recruitment processes, outcome data collection, intra-cluster correlation (ICC).

The trial design acknowledged that:

- The pilot RCT would not be sufficiently powered to provide robust evidence of impact, only an indication of potential effects. It would not provide reliable evidence for the effect size of any impacts.
- Any estimates from a pilot RCT are subject to a high risk of error and high levels of uncertainty. This creates a risk of producing estimates that may exaggerate the impact of the intervention.

Overview of trial design

Table 2 provides an overview of the trial design as outlined in the Pilot Trial Protocol[8]. 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: Family Numeracy

[8] Link to protocol: https://osf.io/2wde6/overview

Trial element	Description
Project title	The impact of family maths courses on parents' progression to further maths courses – a pilot 2-armed cluster randomised controlled trial
Developer	Campaign for Learning
Geography	England
Delivery	Adult learning providers
Evaluator	Institute for Employment Studies
Principal investigators	Seemanti Ghosh, Becci Newton
Evaluation plan authors	Seemanti Ghosh, Becci Newton
Trial design	Pilot 2-armed parallel cluster randomised trial with waitlist control **Treatment arm:** Family Numeracy intervention **Control arm:** added to waitlist for Family Numeracy intervention
Trial type	Pilot
Trial population	Parents/carers (19+) of school children in Key Stage 1 Year 2
Primary outcome	Outcome: Parent's progression to any further maths course Source: Administrative data (ILR)
Secondary outcomes	1) Outcome: Parents' confidence in maths (measure: Likert type scale) Source: primary data using survey 2) Outcome: Child's maths attainment (measure: teacher assessed grades) Source: primary data 3) Outcome: Parent's progression to any further course Source: Administrative data (ILR) using variable LearnAimRefTitle 4) Outcome: Progression to any qualification bearing maths course 5) Outcome: Progression to a L2 qualification bearing maths course 6) Outcome: Progression to any qualification bearing course

Source: Pilot Trial protocol

2.1.2 Recruitment

Eligibility criteria and recruitment

The eligibility criteria for the trial (summarised in Table 3) were adult parents/carers aged 19 and over who:

- Had a child in Key Stage 1 Year 2; and
- Either did not have a Level 2 qualification in maths, did not have functional maths at Level 2 or had a Level 2 maths qualification but lacked confidence.

The original intention was to recruit schools to the trial via providers. However, this was not as successful as hoped and so the MSS pivoted to a schools-first recruitment approach and then matched them to local providers. Providers recruited had experience delivering family learning programmes. Schools and providers were provided with financial incentives (further details can be found in Appendix 3: Cost data).

Parents/carers were recruited to the trial via schools. Participating schools issued parents/carers from Key Stage 1 Year 2 information about the trial and/or hosted briefing events. Parents/carers were then given the opportunity to opt in. As randomisation was at the school level, parents/carers were made aware that there was a 50% chance of receiving the intervention either in summer or autumn term 2025. Parents/carers in participating schools received information and links to the privacy notice explaining the trial, including data requirements and storage procedures and details of school incentives. Parents/carers who did not meet the qualification and confidence eligibility criteria could still attend the FN course if they wished but were excluded from the trial analysis.

Table 3: Eligibility decision guide

Holds Level 2 Maths	Confidence level	Eligible
Yes	Very confident	No
Yes	Fairly confident	No
Yes	Neither confident nor not confident	Yes
Yes	Not very confident	Yes
Yes	Not at all confident	Yes
No	Very confident	Yes
No	Fairly confident	Yes
No	Neither confident nor not confident	Yes
No	Not very confident	Yes
No	Not at all confident	Yes

Source: Multiply Trials evaluation questions

The trial recruited 599 parents/carers across 72 schools but 168 parents/carers who signed up did not meet the eligibility criteria. These parents/carers could participate in the course but were excluded from the analysis.

Parents/carers were recruited to the qualitative research (depth interviews) via a recontact question in the baseline survey. Interviews took place between May and August 2025, by telephone or video call. Interviews lasted around 30-45 minutes for parents/carers in the treatment group and 20-30 minutes for those in the control group. Parents/carers provided informed consent before participating in interviews.

Parents/carers were offered an incentive for taking part in interviews (a £30 shopping voucher). This was to support recruitment of a range of parents/carers, including those who may have busy lives or be reluctant to take part.

2.1.3 Sample size

A minimum of 15 clusters per arm is recommended as a practical suggestion for cluster pilot RCTs aimed at estimating direction of effect (positive or negative) rather than effectiveness. However, in this case, assuming a higher Intraclass Correlation Coefficient (ICC; see glossary in Appendix 1) of 0.2 (20% variation coming from schools) and a large effect size (Cohen's h) of 0.4, the estimated sample size required was at least 28 clusters (schools) in each trial arm. Allowing for up to 30% attrition at school level, it was recommended to recruit 80 schools in total, 40 per arm, with 800 parents/carers in total at an average of 10 parents/carers per school (Appendix 5).

A total of 72 schools and 431 eligible parents/carers were randomised, with 37 schools (228 parents/carers) allocated to the treatment and 35 schools (203 parents/carers) allocated to the control group. Of these, 11 schools (15%) left the trial post-randomisation. At the analysis stage, 1 school was dropped as it had no eligible parents/carers, 4 parents/carers withdrew from the trial, and 2 parents/carers reported their age incorrectly and were excluded as their age eligibility could not be established. A further 18 parents/carers were recruited to FN courses post-randomisation, leading to a final sample of 421 eligible parents/carers across 60 schools (222 in the treatment group and 199 in the waitlist control group).

The variation in cluster size by schools was moderate with an average of 7 parents/carers per school and a standard deviation of 3.93. The smallest cluster size contained 1 parent/carer and the largest contained 21, indicating moderate variation. The forecast cluster size was 10 parents/carers per school. In practice, there were 5 schools in the treatment group and 2 schools in the control group that had more than 10 parents/carers, and these schools contributed 25% of the total sample size at analysis.

2.1.4 Randomisation

This was a cluster randomised pilot trial, with schools as the unit of randomisation. The main reasons for selecting school-level randomisation were to minimise risks of contamination and attrition, which might be more prominent in other designs such as individual-level randomisation. For example, parents/carers within the same school often talk to each other and share ideas, especially when their children are in the same year group. Additionally, the intervention was delivered at school level by the provider, meaning all parents/carers from the school attended the sessions together.

Randomisation was stratified by provider to ensure each had a balanced assignment of schools to treatment and control conditions.

School randomisation occurred after parents/carers signed up to FN, as it was critical to confirm that sufficient parents/carers in the school were interested in taking part. While an average of 10 parents/carers per school was assumed, schools with fewer than 10 parents/carers were considered on a case-by-case basis depending on the provider's ability to deliver to a smaller cohort.

Parents/carers who opted to take part were asked by their school to complete an enrolment form to capture the necessary personal identifiers for matching them in the Individual Learner Record (ILR)[9]. The form included a tick box and clearly stated that by checking it, parents/carers were consenting for their data to be used in the trial.

Schools and providers were then informed of treatment or control group assignment.

Recruitment of parents/carers continued post-randomisation for delivery purposes. These late recruits were included in the main Intention to Treat (ITT) analysis, but to manage potential self-selection bias, they were excluded from the sensitivity analysis. Parents/carers recruited post-randomisation were also included in the IPE interviews.

Each parent/carer who received the intervention in summer 2025 was registered in the ILR by their provider. Control group parents/carers were tracked in ILR using the personal identifiers (name, date of birth and postcode) they provided during sign-up, plus Learner Reference Numbers where available.

2.1.5 Outcome measures

Primary outcome measure

The primary outcome for this trial was:

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

- Progression to further maths courses (measured as a binary outcome). Given FN was registered in the ILR, using Learner Reference Numbers, the intention was to track the treatment group participants six months after the delivery of the intervention began. The control group participants were also tracked in the ILR after matching them using their personal identifiers.

This outcome measure was derived from the following fields recorded in the ILR:

- LearnAimRefTitle – the learning aim reflected a qualification-bearing Maths course.
- LEARNSTARTDATE – the course started after the first day of the FN session

If these conditions were met, the primary outcome measure was coded to 1 and all other cases were coded to zero.

Secondary outcome measure

The secondary outcomes of interest included:

- Confidence in maths (parents'/carers' confidence in maths). This was measured through baseline and endline learner surveys using a question 'Overall, how confident do you feel working with numbers in everyday life?' from the national evaluation of Multiply, measured using a Likert-scale ranging from 1 (not at all confident) to 5 (very confident).

- Composite confidence in maths (parents'/carers' confidence in maths). A second set of questions explored confidence in everyday maths scenarios, using the question '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 (if respondent is a parent); d) Understanding interest rates on bank statements; e) Keeping track of your bank account balance; f) working with numbers as part of a job. Each response was recorded on a Likert-scale as above and response on each scenario was combined to form a composite confidence in maths measure.

- Progression to any courses (measured as a binary outcome).[10]

[10] Given Family Numeracy was registered in the ILR, using Learner Reference Numbers, the intention was to track the treatment and control groups participants six months after the delivery of the intervention in spring 2025 was completed. Where the condition was met, the secondary outcome measure was coded to 1 and all other cases were coded to zero.

- Progression to any qualification bearing courses (measured as a binary outcome).[9]
- Progression to any qualification bearing maths courses (measured as a binary outcome).[9]
- Progression to any L2 qualification bearing maths courses (measured as a binary outcome).[10] [9]
- Children's maths attainment was measured using teacher-assessed grades. Schools submitted these grades directly to Ipsos where available after the start of the intervention. As there is no standardised assessment in Key Stage 1 Year 2, the terminology and scales varied across schools. For example, some used 'below expectations', 'meeting expectations' and 'exceeding expectations' while others used 'working towards', 'mostly achieved' and 'achieved'. Assessment information was collected from teachers on pupils' maths ability before and after the trial in spring 2025 to explore whether improvements occurred and, if so, the pace of change.

2.1.6 Data collection

Primary

Progression to further courses was assessed using Individual Learner Record (ILR) data matched via Learner Reference Numbers 6 months after delivery of the intervention began. The control group participants were also tracked in the ILR after matching them using their personal identifiers.

Secondary

Confidence in maths was measured using surveys that participating parents/carers completed at baseline and endline. Children's maths attainment was measured using teacher assessed grades at baseline and endline.

2.1.7 Data analysis

The evaluation initially recommended 80 schools for this trial, to achieve a minimum of 28 clusters per arm and allow for up to 30% attrition at the school level. Ultimately, 72 schools were randomised, with 431 eligible parents/carers. However, 15% of schools dropped out (attrition), leaving 30 schools per arm in the final analysis sample. This was considered sufficient to reliably detect the sign of the effect, estimate the ICC and assess feasibility.

Primary analysis

The primary analysis for this trial followed an intention-to-treat (ITT) approach. Given that the primary outcome was a binary variable (yes/no progression), the ideal analysis approach would have been a multilevel logistic regression. However, complete separation occurred where no control group participants had a successful outcome. This meant logistic regression could not converge in Stata 17 given the probability of baseline outcome was rare. Therefore, the outcome was treated as linear using a multilevel mixed-effects model, where parents/carers are nested within schools, with provider fixed effects to control for provider-specific characteristics (randomisation was stratified by provider). The estimated treatment effect is reported as a percentage point change in the probability of treated individuals progressing to a maths course compared to the control group.

Analysis of the primary outcome progression (yes/no) was conducted using a multilevel mixed-effects model of the form:

$$Y_{ij} = \beta_0 + \beta_1 T_j + \beta_2 X_{ij} + \beta_3 M_j + u_j + \varepsilon_{ij}$$

Y_{ij} is the binary outcome of yes/no for participant i with school j , X_{ij} a vector of relevant individual-level characteristics, M_j represents the provider stratum in which cluster j belongs represented by a dummy indicator, u_j the cluster random intercept of school and T_j the treatment effect at the school level. To consider the clustered nature of the randomisation, standard errors were clustered at the school level. The significance of estimated effects was evaluated at the 95% confidence level, as specified in the power calculation.

Secondary analysis

For the secondary outcome of confidence in maths (continuous), the analysis was conducted using a multilevel mixed-effects model as per the following specification:

$$Y_{ij} = \beta_0 + \beta_1 T_j + \beta_2 X_{ij} + \beta_3 M_j + u_j + \varepsilon_{ij}$$

For the secondary outcome of progression to courses (binary) and child's maths attainment (binary), the analysis was conducted using the following model specification:

$$Y_{ij} = \Lambda \left(\beta_0 + \beta_1 T_j + \beta_2 X_{ij} + \beta_3 M_j + u_j + \varepsilon_{ij} \right)$$

The expression inside Λ represents log odds from a multilevel logit regression. Y_{ij} is the binary outcome of yes/no for participant i with school j , X_{ij} a vector of relevant individual-level characteristics, M_j represents the provider stratum in which cluster j belongs represented by a dummy indicator, u_j the cluster random intercept of school and T_j the

treatment effect at the school level. To consider the clustered nature of the randomisation, standard errors were clustered at the school level. Significance of estimated effects was evaluated at the 95% confidence level as per the power calculation specification.

Compliance analysis

Compliance was defined as a parent/carer in the treatment group attending at least 50% of sessions and completing 50% of home learning activities. As parents/carers in the treatment group may not have received all sessions or completed all home learning activities, they were considered compliant if they attended 3 or more sessions and completed 3 or more home learning activities.

To model compliance, a binary variable was created: 1 if the individual met the compliance criteria and 0 otherwise. The initial step examined the level of non-compliance through descriptive statistics. The protocol stated that if over 80% of parents/carers were deemed to have complied, no further compliance analysis would be necessary. However, compliance was 34%, which required estimation of a specific Complier Average Causal Effect (CACE) using the instrumental variable (IV) approach with the 2-stage least squares method (Angrist et al., 1996).

In the first stage, treatment assignment was used to predict actual treatment receipt to assess how strongly randomisation influenced uptake. In the second stage, the predicted (instrumented) treatment receipt was regressed on the outcome, adjusting for baseline characteristics and using school-clustered standard errors. The second stage coefficient represents the causal effect of treatment among compliers, whilst removing bias from non-random patterns of treatment uptake. Given the smaller sample size of this pilot trial, the CACE estimate should be treated as exploratory. The analysis assumed that there was no contamination between the treatment and control groups due to the school-level randomisation strategy. Since all parents/carers within a school were either assigned to treatment or control, there was minimal chance of interaction between both groups.

Missing data analysis

The analysis used administrative data sources for the primary outcome. If parents/carers were not found in the ILR, it was assumed that they had not registered for a further course. Therefore, no missingness analysis was needed for the primary outcome. However, missingness was extensive for observed characteristics collected from administrative data alongside primary and secondary progression outcomes. Multiple Imputation by Chained Equations (MICE) could not be successfully completed for these characteristics due to insufficient variation and lack of predictors. Consequently, outcome estimates could not be adjusted for imputed observations.

Sub-group analyses

Given limited power, where possible, exploratory subgroup analyses were conducted where possible for the primary outcome to assess whether the intervention had different effects across the following sub-groups:

- Sex: Coded as a binary variable Male/Female (1/0) using the ILR variable SEX as registered.
- Age: Calculated in years as of 1st September 2025 using data collected by schools during enrolment
- Learning difficulty/disability or health issue: Coded as a binary variable with Yes/No (1/0) values using the ILR variable LLDDHEALTHPROB, supplemented by survey data where ILR data was missing.
- Ethnicity: Derived from the ILR variable ETHNICITY, supplemented with available survey data where ILR data was missing. This was further classified into 5 groups as per the Census 2021 categories[11].
- Employment status: Coded as a binary variable with Yes/No (1/0) values using the ILR variable ILR_I_EMPSTATFDL and survey data (where available) for any parents/carers with missing data in the ILR.
- Deprivation: Area-level deprivation was coded as a binary variable (Most Deprived/Not) (1/0) using parents'/carers' postcodes collected by schools during enrolment and the Index of Multiple Deprivation (IMD) decile data[12].

2.1.8 Variations from protocol

Two deviations were made from the protocol. First, a multilevel logistic regression was pre-specified for the primary outcome, but the data exhibited complete separation (where no control group participants achieved the outcome), producing non-finite maximum-likelihood estimates and unstable standard errors. To preserve valid inference while accounting for clustering, an alternative linear analysis was used.

Second, although the protocol stated that parents/carers recruited post-randomisation would be excluded from analysis, 18 parents/carers were enrolled after allocation was known (13 treatment, 5 control) and were included in the main ITT analysis. Since late joiners might have different motivations for taking part, a sensitivity analysis was conducted excluding this group. The treatment effect changed only marginally, indicating that the trial findings are robust and not driven by these post-randomisation recruits. This

[11] https://www.ethnicity-facts-figures.service.gov.uk/style-guide/ethnic-groups/

[12] https://www.gov.uk/government/statistics/english-indices-of-deprivation-2025/english-indices-of-deprivation-2025-statistical-release

provides valuable insight that limited, unbalanced late enrolment did not meaningfully bias impacts in this cluster trial. Both the primary (all eligible cases) and restricted estimates are reported, and these are consistent in sign, magnitude, and inference.

2.1.9 Limitations

The main limitation to the trial was the short interval between the start of intervention delivery and the ILR data extract. Because the waitlist control group had not yet received the intervention, most had not been registered in the ILR, resulting in extensive missing data for key observed characteristics. This limited the ability to run conditional models and examine how relevant factors influenced outcomes. If providers had been given more time to register all parents/carers in both groups after their respective programme delivery, the dataset would have been far more complete. It is recommended that this trial's data be re-analysed once waitlist delivery is completed and providers have had sufficient time to register these learners on the ILR.

2.2 Implementation and process evaluation

2.2.1 Data collection methods

The IPE was designed to provide insights into possible causal pathways (i.e. how and why programme elements work) for FN outcomes and in final analysis to integrate findings with the impact evaluation strand. The central aims of the IPE were to explore:

- **Compliance:** whether providers submitted the required data to the Ipsos Data Portal.
- **Attrition:** details regarding provider and school withdrawals from the trial.
- **Fidelity:** evidence on how FN was delivered, including the extent to which it was delivered consistently across tutors and schools and to capture the unique features of delivery.
- **Feasibility:** experiences of tutors, teachers/schools, parents/carers and children, including views on what worked well and what did not from initial recruitment through delivery, although indirectly for children.
- **Readiness for trial:** insights into how a FN trial could be taken forward at scale in the future.
- **Perceived outcomes:** any short or intermediate outcomes for parents/carers and children that were anticipated from the intervention but were not the focus of the pilot RCT, how outcomes and impacts emerged and were perceived by parents, and indirectly for children through parents, tutors and teachers, including unanticipated outcomes.

The IPE used a mixed-methods design. Participation in the IPE included:

- Baseline and endline surveys of parents/carers in both treatment and control groups.
- Children's maths progress data collected through teachers against Key Stage 1 Maths benchmarks.
- Qualitative interviews with parents/carers (treatment and control), teachers (treatment and control), tutors and providers (treatment only), senior school staff (treatment only), and wider stakeholders including the product developer and the Managed Service Supplier (MSS).
- Observations of tutor training sessions.

The qualitative interviews used a purposive sampling strategy, aiming for diversity of context, institutions and subgroups taking part. The focus was on building detailed understanding aligned with the IPE research questions and illustrating and explaining factors that may be driving outcomes.

As part of the recruitment to the trial, all respondent types received detailed information to enable them to make informed decisions, including parents/carers. The information covered the surveys and qualitative research as well as information about the trial. Parents/carers' agreement to take part in the trial included consent for the collection of personal data and the primary outcome measure. Parents/carers who did not agree to this could still participate in the FN intervention. Parents/carers who consented and took part were able to opt out of primary data collection at any point.

Parent/carer surveys

The survey took place once at baseline, ideally before the course or within a week of the courses starting, and once at the end. All parents/carers in the trial were invited to take part at both time points (unless they opted out).

This survey included questions to collect evidence for the IPE about:

a. Parents'/carers' overall satisfaction with the course (endline only; RQ5)

b. Parents'/carers' motivations for taking the course (baseline only; RQ5)

c. Perceived outcomes for parents/carers and their child, including on attitudes, willingness to engage with maths, understanding of maths concepts in the Key Stage curriculum, and self-efficacy (endline only; RQ6)

d. Awareness and understanding of maths in the everyday context, and their recall of FN activities as part of the course (endline only; RQ1, RQ2, RQ5, RQ6)

e. Suggested improvements to the course (endline only; RQ8)

The full set of parent/carer survey questions can be found in Appendix 4.

Baseline

The baseline survey used both online open link and Computer Assisted Telephone Interviewing (CATI). Open links to the online survey were distributed to parents/carers by providers in Trial Readiness Packs, which were delivered to providers by the MSS. Parents/carers were able to use the link from autumn 2025. CATI interviews included screening questions to check whether participants had already completed the survey online. If a participant had already completed it online, the CATI interview was terminated.

The baseline survey was completed between October 2024 and March 2025. Most baseline survey responses were online, suggesting that the mode and distribution plan were appropriate. This also suggested that providers were successfully distributing the open link to parents/carers. The proportion of completed surveys via each mode was broadly in line with expectations.

Endline

The endline survey, completed between June and August 2025, was administered in a multimode format, with CATI fieldwork alongside an email survey. Unique links were emailed to participants to take part online accompanied by CATI dialling to non-responders. 9 telephone interviews were administered using live translation services from Language Line.

Survey response rates

Table 4 presents the survey response rates at baseline and endline by treatment status. Out of the 421 parents/carers, 138 (33%) responded to the baseline survey and 255 (61%) responded to the endline survey. Response rates differed by treatment allocation. In the treatment group (n=222), 68 (31%) responded to the baseline and 128 (58%) at endline. In the control group (n=199), 70 (35%) responded at baseline and 127 (64%) at endline. Control group response rates were therefore higher than treatment group rates at both waves.

Table 4: Survey response rates

Response rate	Treatment Baseline	Treatment Endline	Control Baseline	Control Endline	Total Baseline	Total Endline
Response (N)	68	128	70	127	138	255
Response (%)	31%	58%	35%	64%	33%	61%
Total sample	222	222	199	199	421	421

Source: Baseline and endline survey data

Training observation

To gain direct insight into the intervention and tutors' responses to it, members of the IES team attended a tutor training session. The team made clear that their role was observational, focussing on understanding how the intervention supported tutors and its suitability for delivery.

Parent/carer interviews

A purposive sampling strategy was used, aiming to recruit parents/carers from diverse contexts, schools and subgroups. The parent/carer interview sample was designed to ensure representation across different maths levels and confidence. To do this, a unique ID was generated for each parent using school ID, qualifications and confidence in maths.

The initial parent interview sample included 95 parents/carers from 33 schools. From this list, unique combinations were prioritised, including all parents/carers from schools with fewer than 4 parents/carers in total, a quarter of parents/carers from schools with 4-10 total parents/carers and one-third of parents/carers from schools with more than 10 total parents/carers. Following this, an additional 93 parents/carers (different from those in the first list) were selected using the same approach to account for non-responses.

In total, 34 interviews were conducted with parents/carers across 18 providers. 30 interviewed parents/carers were from the treatment group and 4 were from the control group. Initially, the IPE planned interviews with 10 parents/carers in the control group, but these were not fully pursued as the surveys were viewed as sufficient. Interviews were conducted remotely, by telephone or video call.

As with any sample recruited in this way, and despite efforts to achieve breadth and reduce barriers to participation, the sample may have been skewed towards parents/carers most intrinsically motivated to take part in research.

Researchers were trained to safeguard participants and manage any disclosures of harm or safeguarding concerns in line with the disclosure protocol agreed for the programme of Adult Numeracy Trials.

Teacher/school leader, tutor and provider interviews

The evaluation also interviewed tutors and teachers/school leaders in treatment and control groups towards the end of the delivery period, between June and September 2025. Twenty tutors in the treatment group were interviewed and provided in-depth insight into the training and resources and shared perceptions of the school context and how this affected delivery and outcomes. The tutor interviews also explored tutors' responses to supporting both adult and child learning through the intervention and the value in terms of the shared outcomes from these 2 beneficiary groups. Seven teachers from each of the

treatment and control groups provided insight into whether schools offered any similar provision. Both groups commented on the fit and appropriateness of FN for achieving outcomes among parents/carers and children and the influence of taking part in a trial, particularly whether their emphasis on maths changed as a result. Furthermore, 4 providers from the treatment group were interviewed for their insights.

Interviews were conducted remotely, by telephone or video call according to individuals' preferences. They lasted around 30 - 45 minutes. No incentive was offered as participants completed the interview in their professional capacity, during working hours.

Management Information (MI) data

As per the intervention design, efficacy of the FN intervention is conditional upon tutors completing the necessary training dosage and parent/carer and children completing minimum dosage of sessions and home learning for outcomes to emerge. Therefore, dosage measures are critical, tutor training records were collected from CfL and parent/child attendance records were collected from tutors.

2.2.3 Analysis

Quantitative analysis

The quantitative data used for the trial analysis is assimilated from multiple sources. This includes MI data on eligibility criteria, compliance and attendance, as well as compliance and data on children's numeracy outcome, collected using the Ipsos Data Portal platform. The parent/carer survey data for baseline and endline captured self-report outcome measures as well as experiences of learning from the treatment group. ILR data was explored for outcome variables related to progression and further background characteristics. Where ILR data were missing for background characteristics, this was obtained from survey data where available. All data analysis was conducted using the statistical software STATA 17, and personal data was removed prior to analysis.

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[13]. 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

[13] Baseline balance was assessed by regressing treatment assignment on individual-level baseline covariates, controlling for provider fixed effects in all cases and clustering standard errors at the school level. The results indicated statistically significant differences between the treatment and control groups for ethnicity and employment status.

results presented in the IPE findings should therefore be considered indicative rather than definitive.

The focus is on the IPE research questions including parents'/carers' motivation to join the course, their experiences of being part of the course, as well as their attendance in the sessions. Survey response rate varies by question. Appendix 8 shows the response rate by each question.

Qualitative analysis

All interviews were digitally recorded with the participant's consent and transcribed verbatim. The data were thematically analysed using an Excel-based framework. This is a qualitative analysis tool that ensures the analytical process and interpretations are grounded in the data and tailored to the research questions, allowing for systematic and consistent analysis of the interview transcripts. Relevant information from interview transcripts were summarised under key themes, with illustrative quotes noted. This allowed for the comparison and contrast of data across participants and themes. Emerging themes from the qualitative data were then compared with relevant quantitative findings, to explore the extent to which perceptions were reflected across the wider sample.

Synthesising the evidence

The overall approach to synthesising the IPE findings was based on the Theory of Change. Each element of the Theory of Change, including assumptions, enablers, and barriers associated with the links between steps was examined in turn, and the extent to which each element had been realised in practice was assessed. Qualitative insights from tutors, teachers and parents/carers were used to explore the mechanisms outlined in the Theory of Change, as well as the associated enablers, barriers, and assumptions.

2.2.4 Variation from protocol

The IPE originally intended to conduct interviews with 10 control group parents/carers. Following completion of 4 interviews, the decision was made to discontinue this data collection method, as the survey responses were deemed sufficient for the evaluation's purposes.

2.2.5 Limitations

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. 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.

Additionally, the IPE survey analysis was limited by the inability to match baseline and endline responses at the individual level. Small sample sizes, combined with some questions appearing only in the endline survey but not at baseline, prevented longitudinal tracking of individual parents'/carers' changes over time. The analysis therefore relied on cross-sectional comparisons between baseline and endline respondent groups rather than matched paired analysis. While these group-level comparisons still provide useful insights into overall trends and patterns, they cannot capture individual trajectories of change or control for individual-level factors that might influence outcomes. This limitation means that observed differences between baseline and endline may reflect both genuine intervention effects and differences in the composition of respondents at each timepoint, reinforcing the need to interpret survey findings as exploratory and complementary to the main trial outcomes.

3. Impact evaluation results

3.1 Participants and attrition

In total, 72 schools were randomised, after which 11 dropped out before any data collection occurred, and 1 was excluded at the analysis stage as no eligible parents/carers were enrolled. A total of 429 eligible parents/carers across 72 schools were present at randomisation. Of these, 22 parents/carers belonged to the 11 schools that withdrew, a further 4 parents/carers withdrew from the remaining 60 schools, and 18 parents/carers signed-up post-randomisation, bringing the total number to 421. The final intention-to-treat (ITT) analysis sample consisted of 421 parents/carers across 60 schools. Figure 1 provides a CONSORT[14] diagram displaying detailed information regarding attrition.

The primary outcome was progression to any further maths course, derived from ILR records. If a record of enrolment was present, the outcome was coded as 1, and if the record was missing, it was coded as 0. As a result, there was no missing data for the primary outcome. The same logic applied to secondary outcomes that tracked progression.

The secondary outcomes for confidence in maths (both measures) were derived from responses to survey questions. Survey response was missing at both baseline and endline for a large proportion (75%) of the sample. Overall, 109 parents/carers responded to the question about overall confidence at baseline and 106 parents/carers responded at endline. The composite confidence score, based on questions exploring confidence in maths, was available for 106 parents/carers at baseline, and 107 parents/carers at endline.

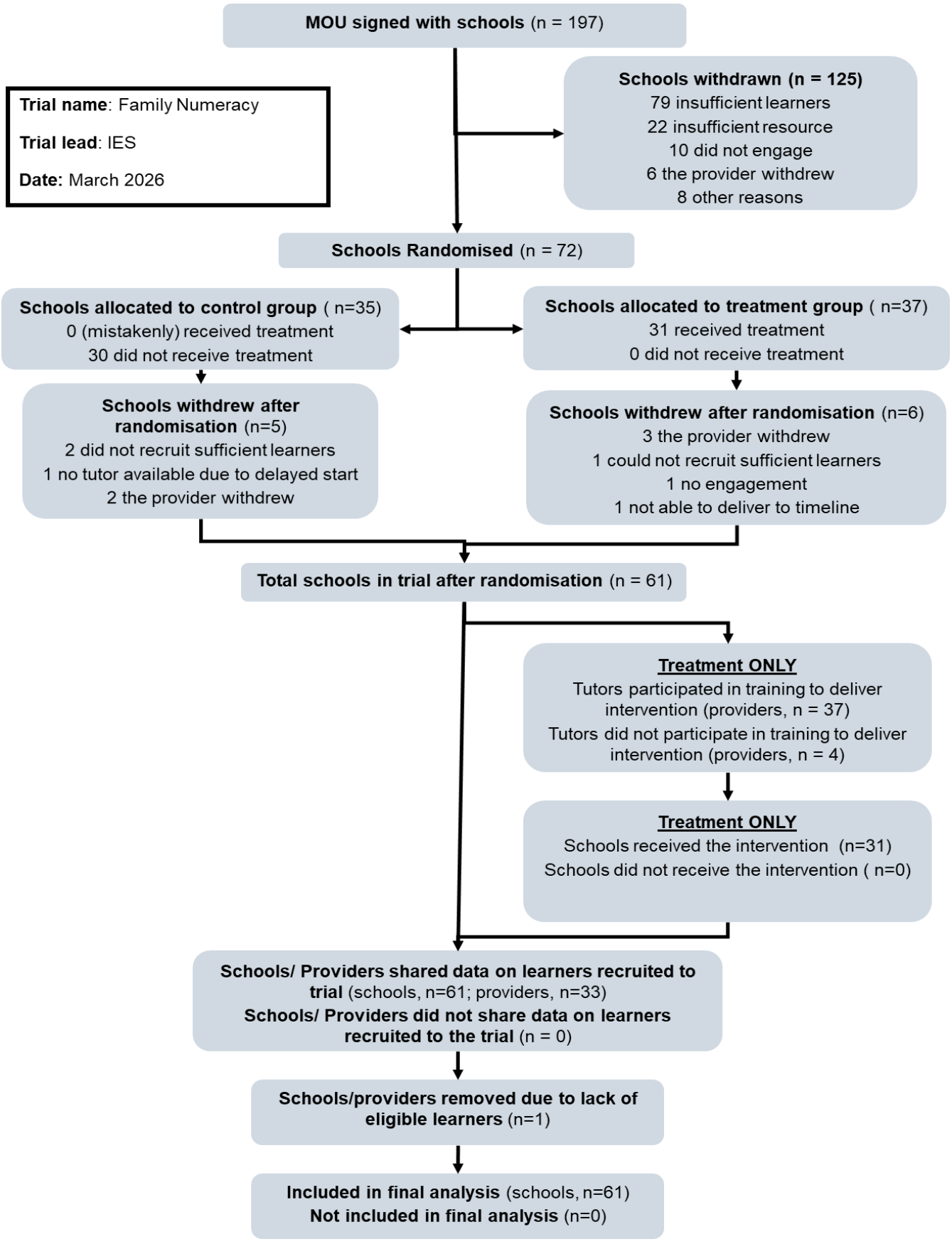
The secondary outcome of children's maths attainment was submitted by schools. Overall, submissions were received for 286 children at baseline (academic year 2023-24) and 283 children at endline (academic year 2024-25). Missing data was approximately 30% at both baseline and endline.

Table 5 shows the level of attrition relative to baseline for each of the secondary outcomes. For the overall confidence measure, only 46 out of the 109 baseline parents/carers responded at endline, corresponding to an attrition rate of approximately 58%. Attrition was higher in the treatment group (62%) than the control group (54%). Similarly, for composite confidence, only 46 out of the 106 baseline parents/carers responded at endline, corresponding to an attrition rate of approximately 57%. Again, attrition was higher in the treatment group (61%) compared to the control group (52%).

[14] 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.

The asymmetric attrition rates suggest potential systematic bias related to treatment assignment. Additionally, the high level of missing data for observed characteristics substantially reduced effective sample sizes for the secondary outcomes. This limited statistical power and increased uncertainty around the estimates. Attrition was minimal for children’s maths attainment.

Figure 1: School attrition map



Source: Management Information data

Table 5: Attrition – secondary outcomes

Outcome	N (Baseline)	N (Endline)	Attrition rate	Attrition rate (Treatment)	Attrition rate (Control)
Confidence in maths (overall)	109	46	58%	62%	54%
Confidence in maths (composite)	106	46	57%	61%	52%
Child's maths attainment	286	283	1%	1%	1%

Source: Management Information data, baseline survey and endline survey

Table A 2 in Appendix 6 summarises observed baseline characteristics. The percentage of missing data was greater than 5% across most characteristics (sex, ethnicity, employment and health status), but not age and deprivation. Approximately 55% of parents/carers were classified as having low deprivation and 44% as deprived, with deprivation defined as a binary variable identifying the bottom quintile (20% most deprived) based on the Index of Multiple Deprivation (IMD). Parents/carers were aged between 24 and 71 years, with a mean of 38 years. Sex was missing for 59% of parents/carers. Where known, the sample was overwhelmingly female (98%). Information on ethnicity was missing for 42% of the sample. Where known, approximately 31% of parents/carers were White, followed by 17% Asian and Asian British, 4% Black, Black British, Caribbean or African and 5% representing other ethnic groups. Information on ill-health or disability was missing for 44% of parents/carers, and 9% reported having ill-health or disability. Information on employment status was missing for 52% of parents/carers, 31% reported being unemployed and 17% reported being employed.

Table A 3 in Appendix 6 shows that the high proportion of missing data in sex, employment status and ethnicity varied by treatment status, with the treatment group having a lower likelihood of missing data for these characteristics (significant at the 95% confidence level for sex and employment, significant at the 90% confidence level for ethnicity). This differential missing data by treatment status does not indicate imbalance in randomisation or systematic issues such as non-response bias but stems from the data architecture.

Information on background characteristics was compiled using a combination of ILR data, survey responses, and management information (MI) collected at sign up. The ILR was the main source of data, where ILR data was missing, MI or survey data was used (Table A 2 in Appendix 6). Since the ILR was the primary source and the waitlist control group had not been registered in the ILR for FN when data was extracted, the missing data for

observed characteristics was higher among the control group, especially for sex for which the ILR was the only source of data.

Table A 4 in Appendix 6 shows the results of the baseline balance checks across key covariates. Baseline balance was assessed by regressing treatment assignment on individual-level baseline covariates, controlling for provider fixed effects in all cases and clustering standard errors at the school level. The results indicated statistically significant differences between the treatment and control groups for ethnicity and employment status. For example, parents/carers from any other ethnic group compared to White had an approximately 20 ppt lower likelihood of being in the treatment group, while being employed was associated with a 27 ppt higher likelihood of being in the treatment group. The estimated differences in treatment probability were significant at the 95% confidence level for these variables, and the differences were moderate. However, these differences cannot be directly attributed to imbalance in randomisation or systematic bias given the differential missing data for these characteristics due to data architecture.

There were no statistically significant differences between the treatment and control groups across age, deprivation, ill-health or sex. There were statistically significant differences between the treatment and control groups in both measures of confidence in maths. Although the estimated difference was small, it was significant at the 95% confidence level. There was no statistically significant difference between the treatment and control groups on the secondary outcome of children's maths attainment.

Overall, the 2 groups appeared broadly comparable, However, since missing data was highly differential across both groups for observed characteristics, any conclusion about the comparability of conditional models of analysis was uncertain. All attributes that showed baseline imbalance were controlled for in impact estimations.

3.2 Outcomes and analysis

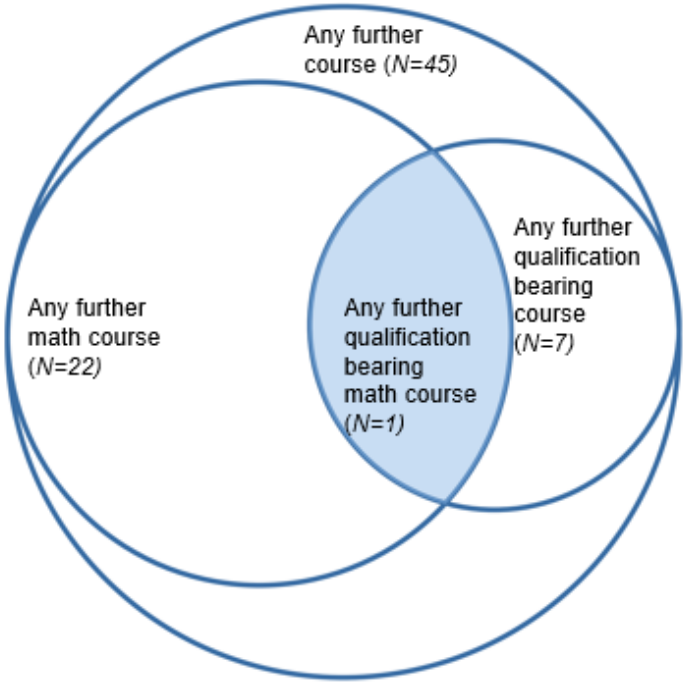
The outcome measures related to progression to further courses were derived from the ILR. Since the pilot trial followed an intention to treat design, the sample included parents/carers as they were randomised to each arm. Parents/carers were identified in the ILR by their unique anonymised identifiers. Parental progression to qualifying courses within 6 months of the first FN session was recorded as an outcome.

Session start dates varied by school. The earliest start date was 24th April 2025, and the latest was 12th June 2025. Since the waitlist control group did not receive the intervention within the timescales of the trial, a generous approach was followed where the earliest start date among treatment schools (i.e. 24th April 2025) was applied to all control schools. Outcomes achieved within 6 months of this start date were recorded. Furthermore, given that the ILR data used for analysis captured data until 11th November 2025, outcomes for any cohort starting the course after 11th May 2025 (i.e., 6 months

before 11th November) were not fully captured if any outcomes were achieved after 11th November 2025.

The primary and secondary parent/carer numeracy outcomes were nested. For example, the primary outcome of 'progression to any further maths course' included the secondary outcomes of 'progression to any qualification-bearing maths course' and 'progression to any Level 2 qualification-bearing maths course', which were both subsets of the primary outcome. Figure 2 provides a pictorial representation of the nested primary and secondary parent/carer outcomes.

Figure 2: Structure of primary and secondary outcomes



The secondary outcome for this trial was parents'/carers' confidence in maths. Participating parents/carers were asked to provide information about their overall confidence level in maths, as well as their confidence across specific everyday financial situations involving maths or numeracy (checking change after buying something, evaluating shopping deals, helping children with homework, and understanding interest rates from banks, keeping track of account statements). Each question used a Likert-type scale where 1 meant not confident at all and 5 meant very confident. A composite confidence measure was calculated by averaging parents'/carers' confidence scores from these specific financial scenarios. The lowest possible mean score was 1 (if the respondent selected 1 on all questions) and the highest possible mean score was 5 (if the respondent selected 5 on all questions).

The child attainment scores using teacher-assessed grades were used for the child-level outcomes. These were submitted by the schools after the start of the intervention, although the exact timeline of the assessment of these grades was not clear. Teachers

submitted children's maths attainment scores for 2024-25 and 2023-24 where 2023-24 was treated as the baseline and was controlled for in the secondary outcome analysis. The child attainment score was coded as binary where either child attainment was coded as 1 meaning 'meeting and above expectation', or 0 meaning 'below expectation'.

Additional data tables contain more detail on survey responses.

Primary outcome analysis

The primary outcome of this trial was progression to any further maths course. Table 6 compares the number of parents/carers who achieved this in each trial arm. Out of 222 parents/carers in the treatment group, 22 progressed to another maths course, giving a success rate of 10%. In contrast, none of the 199 parents/carers in the control group enrolled in a maths course. This suggested that in the absence of the treatment, the probability of the outcome was very rare, with the control group success rate at 0%. This is a rare outcome situation and is called complete separation. On the face of it, this appears to be a clear signal of effectiveness. However, the small number of outcomes overall and the one-sidedness of the result presented some problems statistically. In 'rare events' analyses, there exists the possibility that the result is due to chance. The impact analysis used appropriate approaches to assess this.

Table 6: Achievement of primary outcome by trial arm

Arm	Achieved outcome	Did not achieve outcome	Total
Treatment	22	200	222
Control	0	199	199
Total	22	399	421

Source: Management Information data. Base: All parents/carers.

Table 7 summarises the difference between the treatment and control groups in achieving the primary outcome, using several statistical tests suited to the situation of rare outcomes. The success rate in the treatment group was 10%, while it was 0% in the control group. This produced a risk difference of 10%, with a 95% confidence interval ranging from 6% to 14%, indicating a clear and meaningful gap between groups. Because none of the control group enrolled in further maths learning, standard logistic regression could not be used. Instead, the analysis reported several exact and corrected methods designed for situations where no outcomes were achieved. Fisher's exact test returned a p-value of 0.00, showing that the difference between groups was extremely unlikely to be due to chance. The chi-square statistic (20.81, $p < 0.001$) reinforced this conclusion.

The odds ratios quantified the strength of the association. The exact logistic odds ratio of 30.8 indicated that parents/carers in the treatment group had approximately 31 times

higher odds of achieving the primary outcome compared with the control group. The lower bound of the confidence interval (5.33) was well above 1, confirming a strong positive effect, while the upper bound was infinite because no control participants achieved the outcome.

The Haldane–Anscombe correction, which adds 0.5 to each cell to handle zero outcomes, produced an odds ratio of 44.8, again with a very wide confidence interval, reflecting the uncertainty created by the zero-outcome cell for the control group. Overall, the results consistently indicated that the treatment group performed substantially better than the control group on the progression to further maths courses outcome and the probability that this difference occurred by chance was extremely low.

Table 7: Odds Ratio of achieving primary outcome

Statistical test	Odds ratio
Fisher's exact	0.00
chi2	20.81 (p<0.001)
Risk difference	10%
Risk 95% CI	6% - 14%
Cornfield 95% CI	5.67 - ∞
Exact logistic OR	30.80
Exact logistic 95% CI	5.33 - ∞
Haldane–Anscombe (0.5 correction) OR	44.80
Haldane–Anscombe 95% CI	2.70 - 743.22

Source: ILR. Base: All parents/carers, 421.

Table 8 provides the regression results for the primary outcome i.e. progression to any further maths course. A mixed-effects model (Model 1) was used to estimate the treatment effect. This model helped account for the fact that parents/carers were nested within schools and that individuals within the same school may share similar characteristics. The model included a random intercept for each school, allowing each school to have its own baseline probability of achieving the outcome. Standard errors were clustered at the school level to ensure that statistical inference remained valid even when observations within schools were correlated.

Model 1 controlled for observed characteristics, missing data indicators and provider fixed effects. Provider fixed effects controlled for the fact that the same provider delivered the intervention across multiple schools and that providers may vary in their characteristics. Due to a small number of providers being part of the trial, it was not possible to assume that the sample of providers was a random sample representing the population of providers. Results suggested that the treatment had a positive effect on the likelihood of parents/carers progressing to further maths courses, and this effect was

statistically significant (coefficient = 0.18; p = 0.003). This translated to an 18 ppt higher progression rate among treatment group parents/carers, and the confidence interval suggested the true effect was likely between 6 and 29 ppt. This aligned with the descriptive finding that only treatment parents/carers achieved the primary outcome.

Most covariates did not show significant associations with the primary outcome, indicating that baseline characteristics such as ethnicity, employment status, age, ill-health, and deprivation did not meaningfully predict success once treatment status was accounted for. Male parents/carers had a lower likelihood of achieving the outcome compared to female parents/carers (7 ppt). However, this could have been due to the very small sample size of male parents/carers. Missing data on most background characteristics did not significantly affect the outcome, except for missing data on sex.

Several provider indicators showed significant effects, suggesting that some providers had systematically higher or lower success rates, even after adjusting for parent/carer characteristics. The random-effects estimates showed modest but meaningful variation between schools. The school-level variance (0.012) indicated that schools differed in their baseline likelihood of parents/carers achieving the outcome, justifying the use of a multilevel model. The residual variance (0.023) reflected individual-level differences not explained by the model. These results suggested that the treatment made a real difference. Even after considering parents'/carers' background characteristics, and provider-level differences in delivering the programme, the effect remained statistically robust.

Due to the limitations of the Linear Probability Model (LPM) when estimating the impact on a binary outcome and given that it was not possible to estimate the impact using a standard multilevel logit model due to complete separation, the impact was further estimated using a Firth logistic regression (Model 2). This model corrected the issue of complete separation. However, it did not allow multilevel modelling or clustering of standard errors. The treatment coefficient of 4.91 translated into an odds ratio of approximately 136, meaning that parents/carers who received the intervention had about 136 times higher odds of achieving the primary outcome than those in the control group, and the effect was statistically significant (p=0.009). This odds ratio does fall within the earlier discussed Haldane–Anscombe 95% confidence interval in Table 7. Converting this estimate into predicted probabilities suggested that the probability of success in the control group was 3%, whereas in the treatment group it was about 13%, representing a 10 ppt increase due to the treatment.

Overall, these results were consistent with the direction and similar to the effect size of the LPM, suggesting that the treatment substantially increased the likelihood of achieving the primary outcome, and this conclusion remained robust even under a modelling approach specifically designed for rare events and complete separation. The full table of results for each model is presented in Table A 5 Appendix 6.

Table 8: Regression results for primary outcome

Model	Coefficient	SE	P-value	95% CI (Lower Bound)	95% CI (Upper Bound)	Base N
Model 1- Mixed-effects impact estimate for FN programme with provider FE	0.18**	0.06	0.003	0.06	0.29	421
Model 2- Impact estimate for FN programme with provider FE (firthlogit)	4.91**	1.87	0.009	1.26	8.57	421

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. For Model 1 standard errors clustered at school level. Source: ILR. Base: All parents/carers.

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. For Model 1 standard errors clustered at school level

3.2.1 Secondary outcome analysis

There were a further 7 secondary outcomes; 4 of these were binary outcomes, exploring the progression of parents/carers to further courses in the ILR (Table 9) within the same range of dates used to construct the primary outcome. The fifth and sixth secondary outcomes were parental confidence in maths measured using an overall measure of confidence and an additional measure of composite confidence derived from a set of responses as discussed in Section 2.1.5. The final secondary outcome reported was a child-level outcome comprising teacher-assessed grades of children's maths attainment.

There were no cases of parents'/carers' progression to Level 2 qualification-bearing maths courses. Only 1 parent/carer from the treatment group achieved progression to any qualification-bearing maths course. Broader progression to any qualification-bearing course was slightly more common but still low overall, with 3 parents/carers in the treatment group (1%) and 4 in the control group (2%). The most frequent secondary outcome was parents'/carers' progression to any further course, where 25 parents/carers (11%) in the treatment group and 20 parents/carers (10%) in the control group enrolled in additional learning. Although this represented a modest difference, progression rates remained relatively low overall. Taken together, these results indicated that while the treatment may have encouraged slightly higher engagement with further learning, progression into formal or qualification-bearing courses was limited across both groups.

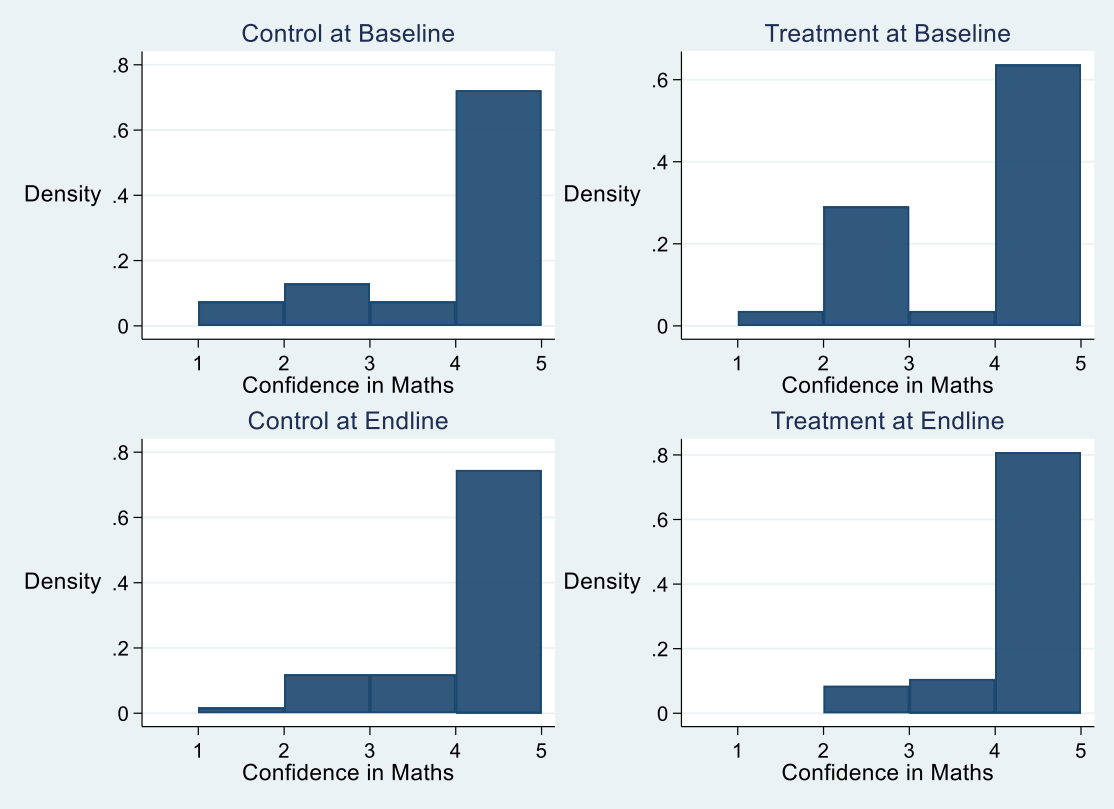
Table 9: Achievement of secondary outcomes by trial arm (progression)

Secondary outcomes (progression)	Trial arm	Achieved outcome	Did not achieve outcome	Total
L2 qualification bearing maths course	Treatment	0	222	222
L2 qualification bearing maths course	Control	0	199	199
L2 qualification bearing maths course	**Total**	**0**	**421**	**421**
Any qualification bearing maths course	Treatment	1	221	222
Any qualification bearing maths course	Control	0	199	199
Any qualification bearing maths course	**Total**	**1**	**420**	**421**
Any qualification bearing course	Treatment	3	219	222
Any qualification bearing course	Control	4	195	199
Any qualification bearing course	**Total**	**7**	**414**	**421**
Any further course	Treatment	25	197	222
Any further course	Control	20	179	199
Any further course	**Total**	**45**	**376**	**421**

Source: ILR. Base: All parents/carers who participated in the trial.

For the secondary outcome of confidence in maths (overall), the response rate was similar across baseline and endline (approximately 25%). Figure 3 shows the distribution of parents'/carers' confidence in maths separately for treatment and control groups at baseline and endline. At baseline, both groups showed a skewed distribution with most responses concentrated at either "fairly confident" or "very confident" for the control group. However, the treatment group had some responses distributed across "not very confident" and "neither". At endline, both groups showed even stronger clustering at the highest level of confidence.

Figure 3: Distribution of confidence in maths (overall)



Source: Baseline and endline surveys. Base: All survey respondents, 109 at baseline and 107 at endline.

Table 10 shows the mean of composite confidence at baseline and endline for each group. At endline, the parents/carers in the treatment group reported an average confidence score of 3.95, while those in the control group reported 3.83. At baseline, the parents/carers in the treatment group reported an average confidence score of 3.76, while those in the control group reported 3.83. This implies that at baseline the parents/carers in the treatment group felt slightly less confident than control group parents/carers. However, this was reversed at endline, when the treatment group reported on average higher confidence levels compared to the control group. Overall, both treatment and control groups reported higher mean confidence at endline compared to baseline, and lower standard deviation at endline, which indicated less variation in responses within groups.

It is important to note that only 107 parents/carers out of 421 responded to these questions at endline and 106 at baseline. Both endline and baseline composite confidence measures exhibited very high levels of missing data. Although the missing data was not differential and predicted by treatment status, low response rates limited the reliability of any comparison between treatment and control group. With more than three-quarters of

data absent, these indicators likely reflected selective response rather than true population confidence, and the observed means may have been biased if non-respondents differed systematically from respondents[15]. Therefore, whether there was any meaningful difference between the improvement of both groups was determined through statistical testing. The overall mean was 3.80 at baseline and 3.89 at endline across all parents/carers indicating that, on average, parents/carers tended to fall between "very confident" and "fairly confident." Therefore, there was a high likelihood of self-selection bias where parents/carers high in confidence might have been the ones who responded to the survey.

Table 10: Achievement of secondary outcome by trial arm (confidence)

Variable	Treatment Mean (SD) N (% Missing)	Control Mean (SD) N (% Missing)	Total Mean (SD) N (% Missing)
Composite confidence (endline)	3.95 (0.76) 47 (79%)	3.83 (0.79) 60 (70%)	3.89 (0.78) 107 (75%)
Composite confidence (baseline)	3.76 (0.84) 54 (76%)	3.83 (0.81) 52 (74%)	3.80 (0.82) 106 (75%)

Source: Baseline and endline survey. Base: All survey respondents.

The child-level secondary outcome, children's maths attainment, showed broadly similar patterns between the treatment and control groups, with no clear evidence of meaningful differences. Table 11 shows that the reporting rate for this outcome was higher among control group schools. Among those reported, both groups had low attainment in 2023-24, with only 6% of treatment group children and 12% of control group children meeting or above expectations, whilst the vast majority fell below expectations. However, the proportions of children meeting or above expectation increased in 2024-25 and were identical across groups at 63%, indicating no difference in recent attainment levels.

[15] As noted in Section 2.2.3, baseline balance was assessed by regressing treatment assignment on individual-level baseline covariates, controlling for provider fixed effects in all cases and clustering standard errors at the school level. The results indicated statistically significant differences between the treatment and control groups for ethnicity and employment status.

Table 11: Achievement of secondary outcome (child's maths attainment)

Variable	Treatment N (% Missing) or mean (SD)	Control N (% Missing) or mean (SD)	Total N (% Missing) or mean (SD)
Child's maths attainment (2024-25) reported n (%) missing	138 (38%)	154 (23%)	292 (31%)
Meeting & above expectation, mean (SD)	0.63 (0.48)	0.63 (0.48)	0.63 (0.48)
Child's maths attainment (2023-24) reported, n (%) missing	135 (39%)	151 (24%)	286 (32%)
Meeting & above expectation, mean (SD)	0.06 (0.24)	0.12 (0.31)	0.08 (0.28)

Source: Management Information data. Base: Children whose grades were submitted.

It was not possible to obtain a meaningful statistical impact estimate for the secondary outcomes 'progression to any Level 2 qualification bearing maths course', 'progression to any qualification bearing maths course' and 'progression to any qualification bearing course' since either there were no outcomes or an extremely small number of outcomes. For the secondary outcome 'progression to any further course', a multilevel logistic regression was used, given the binary nature of the outcome and the nested nature of the data.

Table 12 shows the regression results for the secondary outcome of progression to any further course. Model 1 was the unconditional impact estimate that did not include provider fixed effects, whilst Model 2 introduced provider fixed effects to Model 1. In Model 1 the treatment effect was positive but not statistically significant (coefficient=0.12; p=0.873) and the analysis included the full sample size of 421. However, when provider fixed effects were added in Model 2, the treatment effect increased but was still not statistically significant (coefficient= 0.76; p = 0.266) and the sample size dropped to 225. The drop in the number of observations happened due to the algorithm dropping all observations where there was no variation in outcome within the same provider. This indicated that there was very little variation among parents/carers within certain providers, to the extent that many providers perfectly predicted the outcome (i.e., all parents/carers from that provider either scored 0 or 1 on the binary outcome), suggesting that providers had an important role to play. A conditional model including relevant covariates could not be analysed due to the high proportion of missingness in observed characteristics and the algorithm not converging due to lack of variation. Overall, there was no meaningful difference in outcome that could be attributed to the treatment.

Table 12: Regression results for secondary outcome (progression)

Model	Coefficient	SE	P-value	95% CI (Lower Bound)	95% CI (Upper Bound)	Base N
Model 1: Unconditional impact estimates	0.12	0.76	0.873	-1.37	1.61	421
Model 2: Unconditional impact estimates including provider FE	0.76	0.68	0.266	-0.58	2.09	225

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are clustered at school level.

Source: ILR. Base: All parents/carers.

Table 13 shows the regression results for the secondary outcomes of confidence in maths (overall), confidence in maths (composite) and children's maths attainment. A mixed-effects model was used to estimate the treatment effect for both measures of confidence in maths, whilst controlling for all relevant observed characteristics. Model 1 presents the conditional estimates which suggest that the treatment effect was positive for confidence in maths (overall) but not statistically significant (coefficient=0.21; p=0.508). Similarly, Model 2 suggested that for confidence in maths (composite) the treatment effect was similar in size and positive but not statistically significant (coefficient = 0.24; p=0.170). In both cases, baseline confidence was a significant predictor. It should be noted that the response rate on the questions related to confidence was low, and it was therefore likely that both at baseline and endline, parents/carers who were high in confidence were more likely to have responded. These results show effects among respondents only, not ITT impact for all randomised participants.

The child-level outcome was coded as binary (0 = below expected, 1 = at/above expected). A multilevel logistic regression was used to estimate the impact of the programme on this outcome. Model 3 in Table 13 shows that the unconditional treatment effect was negative but not statistically significant (coefficient= -0.42; p=0.498). Baseline attainment was a significant predictor of endline attainment. A conditional model including parents'/carers' background characteristics was not run for the child outcome due to high missingness in socio-demographic data and the algorithm not converging.

Table 13: Regression results for secondary outcomes

Model	Coefficient	SE	P-value	95% CI (Lower Bound)	95% CI (Upper Bound)	Base N
Model 1- Confidence in maths (overall): conditional estimates	0.21	0.32	0.508	-0.42	0.84	46
Model	**Coefficient**	**SE**	**P-value**	**95% CI (Lower Bound)**	**95% CI (Upper Bound)**	**Base N**
Model 2 - Confidence in maths (composite): conditional estimates	0.24	0.17	0.170	-0.1	0.57	46
Model 3 – Child's maths attainment: unconditional estimates	-0.42	0.62	0.498	-1.64	0.8	275

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are clustered at school level.

Source: ILR, baseline survey and endline survey, MI data. Base: All survey respondents for confidence measures and all cases where child data was submitted for child outcome.

3.3 Additional analysis

A total of 18 parents/carers joined the pilot RCT post-randomisation with a clear imbalance favouring the treatment group (13 in the treatment group and 5 in the control group). Of these, 2 achieved the primary outcome and both belonged to the treatment group. It is likely that parents/carers who joined late might have known the allocation to treatment, since schools had been informed. Therefore, it was assessed whether this possible selective late enrolment biased the estimated programme effect, since these parents/carers were likely to have been the more motivated parents/carers. To test this, the primary outcome Model 1 from Table 8 was re-run excluding all post-randomisation recruits. Table 14 shows that the treatment coefficient reduced only marginally, moving from 0.18 (p = 0.003) to 0.16 (p = 0.007) in the restricted sample, with nearly identical standard errors. This stability indicates that although late recruitment was uneven across groups, its influence on the estimated impact was minimal, and the effect was not driven by post-randomisation recruits. The programme effect therefore appears robust to this sensitivity test.

Table 14: Sensitivity analysis for post-randomisation recruitment

Variable	Coefficient	SE	P-value	95% Confidence Interval (Lower Bound)	95% Confidence Interval (Upper Bound)	Base N
Progression to any maths course	0.16**	0.06	0.007	0.04	0.28	403

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are clustered at school level.

Source: ILR. Base: All parents/carers.

3.4 Missing data analysis

Missingness in observed characteristics including sex, employment, ethnicity and ill-health was greater than 5%. As discussed in Section 3.1, this missing data was not at random and was predicted by treatment status. An individual could only be tracked in the ILR if they had attended a course; this could have been either the FN course or any course the parent/carer had progressed to.

Under standard conditions for conducting Multiple Imputation by Chained Equations (MICE), missing data are assumed to follow either Missing At Random (MAR) or Missing Completely At Random (MCAR). MAR requires that the likelihood of missingness depends on observed variables rather than unobserved ones. In this case, because missingness in observed characteristics was essentially determined by treatment assignment itself, and treatment was strongly correlated with the outcome, the MAR assumption was violated. Instead, the missingness mechanism was closer to Missing Not At Random (MNAR). A missing value for observed characteristics carried information about treatment and indirectly about the outcome. MICE failed here because imputing data for variables with a high proportion of missingness in 1 treatment arm required strong information to predict missing values, which was not available within the scope of this pilot. With minimal variability, the imputation models could not converge. The algorithm essentially had nothing to “learn” from, leading to instability or non-convergence.

3.5 Compliance analysis

Compliance in this pilot trial was measured by attendance of at least 50% of the sessions and completing at least 50% of home learning assignments, therefore at least 3 out of 6 of each. Among the treatment group, 34% met the compliance criteria (attended at least

50% of sessions and completed at least 50% of home learning). The control group, by definition of being on a waitlist, had 100% compliance with their allocation (i.e., they did not receive the intervention).

Table 15 shows a strong effect of compliance on the primary outcome. Compliance-adjusted estimates for the primary outcome followed a Linear Probability Model as they were estimated via a 2-Stage Least Squares regression. As a result, the estimate implied an increase in the effect compared to the ITT estimate (63 ppt vs. 18 ppt) leading to a 45 ppt increase as a result of controlling for CACE and this effect was statistically significant ($p<0.001$). The confidence interval (0.29 to 0.96) indicated that even the lower bound represented a substantial positive impact. This means that parents/carers who fully engaged with the intervention showed notably higher predicted outcome values than those who did not.

Table 15: Compliance adjusted results for primary outcome

Coefficient	SE	P-value	95% Confidence Interval (Lower Bound)	95% Confidence Interval (Upper Bound)	Base N
0.63***	0.17	<0.001	0.29	0.96	421

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are clustered at school level.

Source: ILR. Base: All parents/carers.

3.6 Sub-group analyses

This section reports the main findings of the subgroup analysis for each of the key background characteristics. All models were for the primary outcome, were mixed-effects models and accounted for provider fixed effects. All models included a constant term in addition to the coefficients reported. Table 16 presents the main interaction effects. The interaction terms tested whether the treatment effect differed by the respective subgroup. All interaction coefficients were small and were not statistically significant, suggesting that the treatment effect did not vary by sex, age, employment status, deprivation level or ill health.

Table 16: Regression results interacting treatment and background characteristics

Variables	Coefficient	SE	P-value	95% Confidence Interval (Lower Bound)	95% Confidence Interval (Upper Bound)	Base N
Treatment*male (ref: female)	-0.06	0.05	0.177	-0.16	0.03	421
Treatment*age (years)	0.00	0.00	0.518	0.00	0.01	421
Treatment*White (ref: other ethnic groups)	0.05	0.06	0.378	-0.06	0.16	421
Treatment*em-ployed (ref: not em-ployed)	-0.02	0.05	0.714	-0.13	0.09	421
Treatment*most de-prived (ref: least & middle)	-0.03	0.04	0.404	-0.11	0.04	421
Treatment*ill health (ref: no ill health)	0.04	0.07	0.554	-0.10	0.18	421

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are clustered at school level.

Source: ILR. Base: All parents/carers participating in the trial.

3.7 Estimation of effect sizes

The conditional effect size for the primary outcome 'progression to a maths course' in Table 17was calculated using the square root of the total variance. This effect size was positive and substantially large at almost 1.16 standard deviations. A standard deviation represents the typical spread or variation in the outcome. An effect size greater than 1 standard deviation means that the treatment effect exceeds the size of baseline variation in progression rates. In practical terms, parents/carers who received the treatment progressed to a maths course at a rate more than 1 standard deviation above what would normally be expected. This represented a marked and meaningful improvement, highlighting the strong potential influence of the FN programme. The effect sizes for secondary outcomes are reported in Table 17Table 17. However, none of these effects were significant and no meaningful difference in secondary outcomes could be attributed to the treatment.

Table 17: Results –effect sizes

Outcome	Effect Size	ES CI Lower (95%)	ES CI Upper (95%)
Primary outcome conditional effect size: Progression to a further maths course (Hedge's g)	1.16	0.39	1.94
Secondary outcome unconditional effect size: Progression to any further course (Cohen's h)	0.25	0.06	0.43
Secondary outcome conditional effect size: Composite confidence (Hedge's g)	0.57	-0.25	1.39
Secondary outcome conditional effect size: Overall confidence (Hedge's g)	0.60	-1.17	2.63
Secondary outcome unconditional effect size: Child's maths attainment (Cohen's h)	-0.11	-0.27	0.06

3.8 Estimation of ICC

The model estimates in Table 18 indicate that for primary outcome the ICC was 0.34, indicating high correlation within clusters (schools). This means that 34% of the total variance in the outcome was attributable to differences between schools. The remaining 66% of variation was due to differences within schools. This indicated substantial clustering at the school level.

Due to a higher-than-expected ICC of 34%, a lower-than-expected average cluster size of 7 smaller group sizes and the achieved number of clusters (schools) of 60, the pilot trial was only able to detect relatively large effects, with a minimum detectable effect size (MDES) of 0.48.[16]

While the trial observed a large positive effect of 1.16, there is uncertainty around this figure. The small sample size means there are wide confidence intervals, so even though the likelihood of progression among treatment group was higher among the treated parents/carers by 0.18, the true effect could be anywhere in between 0.06 and 0.29. *[IES to add x and y as the sentence wasn't completed in the draft text]*

[16] The trial was designed to have the power to detect an effect size of 0.4 and above, based on an assumed ICC of 20%, an average cluster size of 10 and cluster level attrition of 30%. Although the pilot ended up with 4 clusters more than anticipated the higher ICC and smaller cluster size pushed up the MDES.

Importantly, the actual effect size being higher than the MDES does not imply that the pilot trial inadvertently functioned as a full trial, but rather revealed the true variability, clustering, attrition patterns and plausible effect sizes needed to design a robustly powered definitive trial. The pilot therefore fulfilled its role by improving the accuracy of sample size planning and identifying the conditions required for a future full-scale RCT.

As such, future power calculations for an effectiveness trial should assume target effect size (Cohen's h) of 0.2. Assuming MDES 0.2, and the average cluster size of 7, ICC of 34% and 17% school-level attrition, all as observed in the pilot trial, the post-hoc power calculation (Appendix 5) suggested that the number of schools required to run a full-scale trial to identify the effectiveness of FN would be approximately 410.

Table 18: ICC conditional estimates

Outcome	Cluster Variance	Residual Variance	ICC
Progression to further maths course	0.012	0.023	0.341

4. Implementation and process evaluation results

4.1 Overview

This section examines the delivery of the FN intervention as experienced by parents/carers, tutors, senior school staff, teachers and providers. It draws on qualitative and quantitative data from interviews, surveys and attendance records. The IPE covered tutor and parent/carer engagement, delivery practices and relative contextual factors that impacted those taking part. 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.

4.2 Summary

The IPE findings can be summarised as follows:

- **Compliance**: Providers submitted the required data to the Ipsos Data Portal and this was high quality and complete. This was supported by mandatory fields in the submission template and help from researchers. Approximately 34% of parents/carers in the treatment group attended 50% of the FN sessions and 50% of the home learning sessions, which was the level of compliance and minimum dosage set by the product developer.
- **Attrition**: A total of 51 providers withdrew from the FN trial, with 7 withdrawing before signing a contract. A total of 264 schools withdrew from the trial, with 253 withdrawing before randomisation. The most common reason for providers and schools withdrawing was insufficient parents/carers enrolling for the FN intervention.
- **Fidelity**: The intervention was delivered as planned in terms of the number of sessions and their timing. Tutors were flexible in delivery, adjusting session length, and adapting content to fit the needs of parents/carers and children.
- **Feasibility**: The course was feasible to deliver and well received. Parents/carers and children were engaged, and tutors had positive experiences. Training and support were easy to access and not burdensome.
- **Readiness for trial**: The pilot was considered scalable for a full trial. The intervention worked well in schools, and data collection worked well. However, the language in recruitment materials could be simplified to improve parent/carer take up and more time for parent/carer recruitment would be beneficial.
- **Perceived outcomes**: Parents/carers and children who took part in FN gained confidence in their ability to use maths and developed more positive attitudes

towards maths. Parents/carers also felt better prepared to help their children with maths learning. Parents'/carers' more positive attitudes and improved maths skills motivated them to consider enrolling in further maths courses. Tutors reported increased knowledge and confidence in delivering family learning courses and a better understanding of the Key Stage 1 maths curriculum. Many indicated in interviews that they had not delivered to parents/carers and/or children in a school setting before. Schools involved in FN reported increased parental engagement with their children's learning and with their school.

4.3 Compliance

This section considers the extent to which providers and tutors complied with the requirements of the FN intervention, which were outlined in the Trial Readiness Pack and included data submission timelines and eligibility criteria adherence details. Additionally, it covers parent/carer and child session attendance and home learning completion.

4.3.1 Key compliance findings

- Schools participating in the Family Numeracy trial were required to submit parent/carer data to the Ipsos Data Portal prior to randomisation (in early April 2025).

- The parent/carer data submitted by schools was high quality with high levels of completeness. Some schools faced minor issues when submitting their data (e.g. error messages when attempting to upload, lack of experience with spreadsheets), but Ipsos provided support via email and one-to-one calls with schools.

Schools were required to upload data on parents/carers taking part in the trial to the Ipsos Data Portal. This comprised parent/carer demographic information and contact details, along with confirmation that they had been provided with information about the trial and had opted in to their data being shared for this purpose and to being contacted to take part in the primary research. Only those schools that had submitted their parent/carer data by early April 2025 were randomised. For those undertaking FN in spring/summer 2025 (i.e. the treatment group), providers were required to submit attendance data for each of the 6 sessions that made up the course.

The quality and completeness of the parent/carer data from schools was high. This was due to the embedding of compulsory fields and rules within the data submission template, which were designed to drive quality and accuracy. For example, date of birth had to be in the correct format, or it would not be accepted, and contact details were flagged if they looked incorrect (e.g. if the telephone number was not the expected

length). This meant that the parent/carer data was complete and in a consistent format from all school. The only missing data was telephone numbers as this was not a compulsory field.

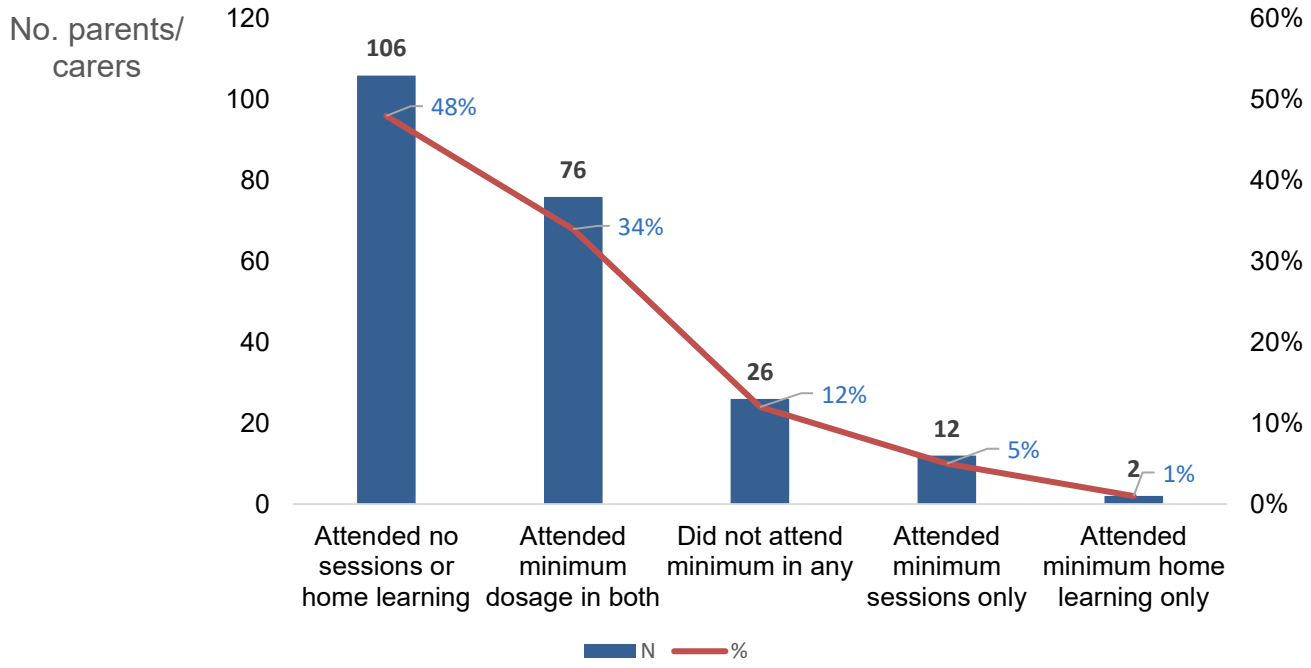
Some schools faced challenges in uploading their parent/carer data. This included lack of experience with data and spreadsheets, error messages when attempting to upload due to data being missing or in the wrong format and confusion about requirements. These were resolved through dedicated support provided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

A key requirement of the trial was that participating parents/carers had to be aged 19 by 1 September 2025 to be eligible. However, 1 provider enrolled a parent/carer who was under the age of 19. To ensure compliance with the trial requirements and data sharing arrangements, this parent/carer was removed from the data.

4.3.2 Parent/carer and child session attendance and home learning completion

As shown in Figure 4, 76 out of 222 (34%) parents/carers allocated to receive the treatment completed the minimum dosage. Almost half (106 parents/carers or 48%) did not engage with the intervention at all. The remaining 40 parents/carers (18%) engaged only partially, either not meeting the minimum dosage for sessions or home learning or meeting the requirement for only one component but not both. This indicated that compliance with minimum dosage was low.

Figure 4: Compliance in the treatment group



Source: Management Information data. Base: All parents/carers in the treatment group, 222.

Table 19 shows attendance by number of sessions. Among parents/carers who completed the minimum dosage, 34 parents/carers (15%) attended all sessions, and 30 parents/carers (14%) completed all home learning tasks. Overall, 88 parents/carers (40%) attended at least 50% of the sessions, whilst 78 parents/carers (35%) completed at least 50% of the home learning tasks. However, 108 parents/carers (49%) did not attend any sessions, and 117 parents/carers (53%) did not complete any home learning tasks. The attendance rate of children was predictably consistent with the attendance of their parent/carer, with children typically participating when parents/carers attended, unless the child did not want to.

Table 19: Parent/carer and child attendance

Sessions	Parent/Carer (*n*)	Parent/Carer (%)	Child (*n*)	Child (%)	Home Learning (*n*)	Home Learning (%)
No session	108	49	108	49	117	53
1 session	11	[u]	11	[u]	14	[u]
2 sessions	15	[u]	15	[u]	13	[u]
3 sessions	9	[u]	8	[u]	10	[u]
4 sessions	20	[u]	19	[u]	18	[u]
5 sessions	25	[u]	26	[u]	20	[u]
6 sessions	34	15	35	16	30	13
Total	222	100	222	100	222	100

Note. Where cell counts are <30, percentages have been suppressed and marked as [u] due to low reliability

Source: Management Information data. Base: All parents/carers in the treatment group, 222

Table 20 shows attendance by session. Attendance gradually decreased after the first 2 sessions, with the highest attendance recorded at 93 parents/carers (42%) in Sessions 1 and 2. Child attendance was consistent with parent/carer attendance, except in the last 2 sessions where the data indicated it was higher; however, it is not clear if this was reliably recorded. The percentage of parent/carers completing home learning decreased between Session 1 to Session 4, before increasing slightly in Sessions 5 and 6. However, across all sessions, compliance with home learning remained consistently lower than attendance at sessions.

Table 20: Parent/carer and child attendance by session

Session Number	Parent/ Carer (*n*)	Parent/ Carer (%)	Child (*n*)	Child (%)	Home Learning (*n*)	Home Learning (%)
1st session	93	42	92	41	85	38
2nd session	93	42	93	42	79	36
3rd session	76	34	76	34	67	30
4th session	69	31	70	31	61	28
5th session	72	32	75	34	64	29
6th session	74	33	75	34	66	30

Source: Management Information data. Base: All parents/carers in the treatment group, 222

Most parents/carers found it feasible to complete all classroom-based sessions and at least some or all the home learning activities. Of the 57 parents/carers who completed the endline survey, 23 (approximately 40%) said they had completed all classroom-based lessons and all home learning activities, whilst approximately 33% completed all classroom-based lessons and some of the home learning activities.

Table 21 provides details on self-reported session and home learning completion.

Response category	Frequency (n)
Yes – completed all the classroom-based lessons plus all of the homework	23
Yes - completed all the classroom-based lessons and some of the homework	19
Yes - completed all the classroom-based lessons but none of the homework	1
No – left the programme part way through	5
No – the programme is still in progress	1
Don't know	6
Prefer not to say	2
Total	57

Table 21: Parent/carer self-reported attendance

Source: Endline survey with parent/carer. Base: All survey respondents.

4.4 Attrition

The final attrition report provided by the MSS indicated that a total of 51 providers and 264 schools withdrew from FN. Of these, 7 schools withdrew before signing a contract. The most common reason for withdrawing was being unable to recruit sufficient parents/carers. Other reasons for withdrawal included:

- Providers lacking time and/or capacity to support recruitment and being unable to recruit sufficient tutors and / or sufficient schools. This was exacerbated by uncertainty about when the course would begin, and what they perceived as inadequate funding.
- Schools lacked interest or could not resource hosting the intervention or parent/carer recruitment.

Details of provider withdrawals are provided in Table 22.

Table 22: Provider attrition

Reason for withdrawal	Before randomisation	Treatment	Control	Total
Not enough parents/carers	17	2	1	20
Not enough resources (i.e. limited staff capacity)	8	0	0	8
Not enough recruited schools	7	0	0	7
Not engaging with trial (i.e. not interested in taking part)	7	0	0	7
Not enough tutors	1	0	1	2
Other	7	0	0	7

Source: MSS FN attrition report

The most common reason for schools withdrawing was having insufficient parents/carers enrolling for FN. Other reasons included schools having limited staff capacity, being uninterested in taking part, experiencing unforeseen circumstances, lacking Key Stage 1 Year 2 classes, and being unable to commit due to uncertainty about course timings.

Even where schools were interested and considered participation feasible, they sometimes withdrew for operational reasons. These included: not having an established relationship with a provider, the MSS being unsuccessful in securing a provider match for the school, providers withdrawing, or disagreement with trial group allocation. Details of school withdrawals are provided in Table 23.

Table 23: School attrition

Reason for withdrawal	Before randomisation	Treatment	Control	Total
Not enough parents/carers	111	1	2	114
Not having a provider	46	0	0	46
Unsuccessful provider match	42	0	0	42
Not enough resources	24	0	1	25
Not engaging with trial	15	1	0	16
Providers withdrew	6	3	2	10
Disagreement with trial group allocation	1	1	0	2
Other	8	0	0	8

Source: MSS FN attrition report

4.5 Fidelity

Analysis of fidelity explored the extent to which treatment tutors delivered the intervention as intended, including barriers and enablers to delivery, course content and structure. Key fidelity findings included:

- The resources and tools were important for supporting tutors to deliver FN as intended.
- Tutors broadly followed the approach and format of FN, but some adjustments were made to the content covered during the sessions. Reasons for tutors adapting course sessions primarily included limited session time and the current skill and ability levels of parents/carers and children.
- The main barrier to delivery, as reported by tutors, was ensuring sufficient time to cover the entire lesson plan.

4.5.1 Pre-intervention training attendance

Almost all treatment tutors (92 out of 95) attended the pre-training while 3 did not. This indicates high compliance with the intervention training.

4.5.2 Delivery and adaptations

The FN intervention resources and tools were critical in supporting tutors to deliver FN as intended. Tutors were provided with weekly instructional videos, which included detailed steps on how to complete the practical activities. However, tutors demonstrated varied understanding of how these videos should be used. Some tutors used the videos before

sessions to prepare for the activities, whilst others showed the videos to parents/carers during sessions. Greater clarity on the intended use of these instructional videos would have been beneficial.

The weekly lesson plans and PowerPoint slides were useful in ensuring tutors delivered the activities as intended, although some tutors made minor changes to the slides. This included changing instructions to make activities more feasible for parents/carers and children to complete and skipping some 'ice-breaker' or 'progress check' questions. Tutors' reasons for omitting these elements related to concerns that parents/carers would perceive them negatively, which could affect their engagement. Some tutors fed back that a list of resources needed for the activities would have been helpful to receive in advance of delivery.

The tutors who were interviewed said they had delivered all 6 FN sessions. They reported that FN was typically delivered to small groups (1 per school) that consisted of up to 9 parents/carers.

While tutors broadly followed the approach and format of FN, they made some adjustments to the content. The main reasons for these adjustments were limited session time and the varying skill and ability levels of parents/carers and children**.** Some tutors adapted the timing, extending sessions to 90 minutes because the practical activities that parents/carers and children completed in the second half of sessions often took longer than initially expected. Tutors often tailored the topic and related practical activity based on the children's capabilities. Some reported having to make activities easier as they were pitched above the Key Stage 1 Year 2 level. Others explained that where children had a good grasp of maths, they stretched activities to make them more challenging, matching those children's abilities. Tutors generally viewed the session activities as being open to tailoring, which facilitated any changes.

Tutors also reported that the language used in the PowerPoint slides and booklet was often too complex for both parents/carers and children, particularly for those who had English as an additional language. Tutors therefore simplified the language, made instructions more succinct, and/or included pictures to illustrate particular points.

> I think the PowerPoint slides that were provided for our particular demographic were way too above, vocabulary wise. Yes, they were too wordy. - *Tutor*

Tutors also made slight adaptations to session activities so that they would fit within the allotted session time and were at the right level for the parents/carers and children. For example, if an activity required cutting paper, 1 tutor adapted the session so that the parents/carers did all of the cutting before the children arrived (otherwise, there was insufficient time to finish the activity).

Other adaptations included simplifying activities to below the Key Stage 1 Year 2 level when a parent/carer and child both exhibited low literacy and numeracy skills and modifying the colour wheel activity to include a list of possible options with images (instead of words) for parents/carers who had English as an additional language. Another tutor created resources for parents/carers for each session that included pictures of the objects they would be making in the activities. A further tutor adapted the clock activity to incorporate a digital clock as many of the children in their session tended used phones and digital clocks to tell the time rather than analogue clocks.

> I had a few parents/carers who had English as an additional language…and the activity where … you had to colour your day, the colour wheel, you see? There was a lot of language in that, there were lots of words. So, what I did was, I, kind of, put a list of possible things for the day with images next to them… then she could see what they were, instead of the spoken language. - *Tutor*

Tutors indicated that the main barrier to delivery was having sufficient time to cover the lesson plan. They explained that the first session, which also included administrative tasks, was particularly challenging in terms of timing. Some also commented that attendance decreased over time, which made sessions less interactive. In some cases, the rooms in which sessions took place posed challenges as they lacked sufficient space or equipment for parents/carers to work with their children on the practical activities.

4.6 Feasibility

This section explores findings around the extent to which the intervention is likely to be practical and feasible. It also covers parent/carer attendance.

4.6.1 Motivations to engage with the intervention

Senior school staff were motivated to take part in FN because of its potential to increase parental engagement. Several teachers and senior staff reported prior low parental involvement and confidence in supporting children's maths learning and saw the intervention as a good opportunity to engage parents/carers in a non-threatening way.

> It [Family Numeracy] resonates with a problem that I feel we have, which is engaging our parents/carers in maths and it feeling approachable, so I think that's my thought process, and I know my maths lead feels the same. - *Senior school staff member*

Providers were enthusiastic about the opportunity to do more family learning and centre this on the importance of maths. They explained that they believed family learning and early parental engagement were essential in developing parents'/carers' confidence in

maths skills, and they were therefore interested in supporting an intervention based on this approach.

> I was motivated by the element that it was a triangle of participation … the Family Learning Tutor, … parents, and … children. And apart from … toddler groups, it's very hard to get that triangular formula in family learning because children are at school all day and if it's the school holiday, if you offer something in the holiday, the parents/carers just want to drop their kids off. - *Provider*

The financial incentive offered to schools and providers for taking part was seen by those interviewed as a secondary motivator, with some stakeholder groups reporting that they would have decided to take part in the trial regardless. Some senior school staff reported that they had received an email from their local authority adult learning curriculum manager asking if they would be interested in the course and offering to discuss what was on offer.

4.6.2 Tutors' and providers' understanding of the FN approach and rationale

Many providers believed the rationale for FN was clear. Predominantly, providers and tutors viewed the FN intervention as an opportunity to engage parents/carers and children in sessions to:

- encourage parents/carers to use their maths skills to support their children in maths,
- help parents/carers gain more confidence to engage in maths activities with their children,
- help parents/carers gain more confidence to use maths in everyday life,
- encourage parents/carers to enrol in maths courses in the future,
- support children's maths learning and
- help children gain more confidence in using maths.

A tutor mentioned discussing the course objectives with parents/carers and children during the first session. He felt that this brought clarity to the purpose of FN. Another tutor asked parents/carers early on about their previous experience of maths. This led to the realisation that most of the parents/carers had low motivation for engaging with maths, which was reflected in the limited help they had offered their children with maths at home prior to taking part.

> It was around engaging more adults who need to support their children, and they have confidence to go and speak to the teacher if they weren't sure of something, and to develop their confidence in where maths is in their daily life. They're going to bring that to the attention of their children, and then they can consider whether or not they wanted to take any extra … qualifications themselves. - *Tutor*

Some tutors said the FN course did not fully meet its expected aims. They attributed this to parents/carers having greater maths confidence and competence than anticipated by the intervention, sessions not being long enough to adequately cover all material and lack of provision tailored for parents/carers with low English language skills and children with diverse needs, including Special Educational Needs and Disabilities (SEND, autism and ADHD).

4.6.3 Feasibility and usefulness of pre-delivery training and support

The pre-intervention training was offered through both live online training sessions and recorded sessions. Predominantly, the tutors said that the training was useful and comprehensive. It helped clarify the intervention content and ensured sessions were delivered as intended. Some noted that the pre-delivery training provided them with reassurance about what was expected in terms of session planning and delivery.

The availability of a recorded training session was central in promoting consistent delivery. The recording was particularly beneficial for tutors who felt less confident in family learning or numeracy, as it enabled them to revisit particular sections closer to delivery for clarification and reinforcement. Some of these tutors were new to teaching maths or family learning approaches and found that while the pre-delivery training covered a lot of material, being able to revisit sections helped to break the content down. However, not all tutors needed the level of detail supplied.

> It was useful, … It's very prescriptive, which is good if you don't have that confidence in teaching mathematics … I think, for me actually, it was a bit long. We were going through each lesson step-by-step but again, I think that is beneficial for those who do need it. – *Tutor*

Some tutors suggested improvements to the pre-delivery training materials, including focusing on presentation aspects of the PowerPoint slides and covering details about next steps required of tutors following the training (e.g. that tutors were required to provide evidence that they had attended the training sessions). A tutor mentioned that it would have been helpful to receive the pre-delivery training closer to the start of course delivery.

In addition to pre-delivery training, tutors noted that they were provided with instructional videos and PowerPoint slides about the course sessions to review in their own time. All who commented on these provided positive feedback. Tutors watched the instructional videos on their own to prepare for course sessions. Some also showed the videos to parents/carers during sessions but said the videos were too long to share in their entirety for this purpose. They suggested that some parts of the videos could be cut to make them more concise (e.g. shorten clips of colouring activity).

4.6.4 Setting up the intervention

Staff in participating schools reported parent/carer recruitment as the main challenge in setting up the intervention. Teachers said there was a tight timeframe in which to approach parents/carers and enrol them onto the intervention, particularly where parents/carers had limited engagement with schools. This was also true for schools recruiting to the waitlist for autumn/winter courses, who similarly identified this as the main challenge. Teachers in smaller schools found recruitment of parents/carers to be particularly challenging due to the small cohort size of Year 2 pupils. These teachers suggested a preference for recruiting from a wider cohort, potentially based on the child's maths attainment level rather than their year group, to enable reaching a larger number of parents/carers.

Notably, teachers and tutors did not report any challenges around releasing children to attend FN sessions. Most schools scheduled sessions to align with school drop-off or pick-up times, which they reported was helpful in ensuring the process of releasing children was smooth.

4.6.5 School and teacher responses to delivery

School staff said FN tutors were knowledgeable and able to connect well with the parents/carers and children who participated. They noted that tutors added credibility to the course and confidently discussed how children would use maths in the future. Generally, school staff commented that tutors arrived on time and were well prepared.

4.6.6 Barriers to engagement and participation in the intervention

Parent/carer and child engagement in the intervention was shaped by a combination of practical enablers and barriers. While many parents/carers in interviews did not identify specific challenges, those who did often described barriers such as childcare or unexpected personal circumstances. Teachers also highlighted parent/carer attendance as a key barrier to the intervention being delivered as intended, with sessions often running with fewer parents/carers than anticipated. Again, this was mainly linked to childcare commitments. Tutors described more logistical barriers. This included limited

time to cover all planned activities and issues with facilities, such as room space or access to functioning equipment, which occasionally hindered smooth delivery.

4.6.7 Translation of FN to other Key Stages

Tutors reported that it would be valuable to translate the FN approach to other Key Stages. They saw the interaction and joint learning between children and parents/carers as a central element in achieving the intended outcomes and believed that this could be translated to Key Stage 2, in preparation for children transitioning to secondary school.

4.6.8 Parent/carer experiences of FN

This section explores parents'/carers' experience of the intervention, including their engagement with the course, perceptions of what went well and what did not, suggested improvements, and what they gained.

4.6.9 Motivations to engage with the intervention

Parents/carers were not particularly motivated by improving their own maths skills but were attracted to FN by the chance to better support their child's maths learning. This was despite parent/carer survey respondents indicating minimal participation in maths courses as adults prior to FN and limited learning of maths beyond age 19. Approximately 53% of parents/carers had learned maths up to the age of 16 and 38% up to the age of 19. 84% of respondents said they have never taken a maths course before as an adult.

36 parents/carers responded to the survey question asking about the main reason they wanted to take part, and 75% said this was to be able to support their child's education, whilst 14% wanted to improve their skills and knowledge about maths. Fewer than 5 noted other reasons including enhancing employability, improving parenting skills, and preparing for further training or courses. This strong emphasis on supporting children's learning aligned closely with the themes emerging from the qualitative interviews.

Before the trial, some parents/carers had quite frequent engagement with the school, but most did not. The survey explored whether parents/carers had received any support from the school to help them understand the children's Key Stage 1 maths curriculum or curriculum in general. Open-text responses to this item in the survey indicated that schools tended to offer partial support, including communicating with parents/carers about their children's performance in school through an app, one-on-one visits with parents/carers to address children's needs and parents' evenings.

Some interviewees described having low maths confidence due to previous negative experiences during schooling, while others were parents/carers who had been educated

overseas. Parents/carers often did not have much awareness of the Key Stage 1 maths curriculum. They highlighted that the way in which their children learned maths in school was different from how they had been taught it.

> I wanted to find out how I can support my child better to make her enjoy maths more than I did. And to see what's next they are going to learn and how to improve language and English as well – *Treatment group parent*

A key assumption of the Theory of Change was that parents/carers would be motivated to take part to support and be involved in their child's education. These findings in combination suggested that the first condition of the Theory of Change was met.

4.6.10 Parent/carer perceptions of FN

A total of 44 treatment group parents/carers (20%) responded to the survey questions related to perceptions about FN. The results are summarised in Table 24.

- Overall satisfaction: 91% of respondents were either very or fairly satisfied with the FN course.
- Maths covered in course: 59% felt the maths covered in the course was about right and 34% felt it was too easy. Only about 5% reported it to be too difficult.
- Overall engagement: 96% of respondents thought the course was very or fairly engaging.
- Recommending a similar course to others: 21% reported already recommending the course it to others, and 75% said they were either very or quite likely to recommend to others.

Respondents' suggestions for improvement included making the course content more challenging, as they felt it was too easy for Key Stage 1, having longer session time with the children, and providing more flexibility in session timings to make it easier for working parents/carers to attend. Parents/carers in the survey also suggested extending the course beyond 6 weeks and creating a WhatsApp group for the participating parents/carers so that they could communicate with each other outside of course sessions.

These findings indicated that the maths content was accessible for parents/carers who did not possess Level 2 maths qualifications or functional maths competence. Positive engagement and satisfaction levels, coupled with parents'/carers' willingness to recommend the programme, indicated that the intervention would likely be attractive if rolled out at greater scale.

Table 24: Perceptions of parents/carers about FN

Variable/level	Frequency
Overall satisfaction - **Very satisfied**	26
Overall satisfaction - **Fairly satisfied**	14
Overall satisfaction - **Neither satisfied nor dissatisfied**	[c]
Overall satisfaction - **Fairly dissatisfied**	[c]
Overall satisfaction - **Very dissatisfied**	[c]
Overall satisfaction - **Total**	**44**
Maths covered in course - **Too easy**	15
Maths covered in course - **About right**	26
Maths covered in course - **Too difficult**	[c]
Maths covered in course - **Don't know / can't remember**	[c]
Maths covered in course - **Total**	**44**
Overall engagement - **Very engaging**	27
Overall engagement - **Fairly engaging**	[c]
Overall engagement - **Neutral**	[c]
Overall engagement **- Total**	**44**
Recommend programme - **I have already recommended it**	9
Recommend programme - **Very likely**	26
Recommend programme - **Quite likely**	7
Recommend programme - **Neither likely nor unlikely**	[c]
Recommend programme - **Very unlikely**	[c]
Recommend programme - **Total**	**44**

Note. Cells with fewer than 5 responses have been replaced with [c].

Source: Respondents to endline survey in the treatment group.

Parents/carers were very positive about the approach and format of FN overall. Those with lower confidence in maths particularly valued the relaxed atmosphere and the tutors whom they found approachable. This supportive environment enabled them to engage fully with the content and feel comfortable discussing their own or their child's challenges with maths in an open and honest way.

Parents/carers also praised tutors for their ability to explain maths concepts clearly while simultaneously keeping children engaged. Tutors' skills in tailoring activities to suit the varying abilities of children were seen as a key strength.

> The teacher was fabulous. She was absolutely wonderful. She really engaged with the children and her knowledge and skills that she had were really helpful and she could interchange depending on the level that the child understood. – *Treatment group parent/carer*

Parents/carers particularly enjoyed the practical nature of the activities. They explained that these hands-on tasks were central to maintaining their child's interest and

enthusiasm throughout the sessions. The home learning activities, which often involved DIY and craft-based tasks, were considered particularly valuable by parents/carers. These activities helped parents/carers to initiate conversations about maths at home.

4.7 Readiness for trial

This section includes an assessment of the intervention and readiness of the trial methodology for implementation at a larger scale.

Interviewees who took part in the FN intervention strongly supported it. All groups involved in the intervention were positive about their experience of the sessions, taking part in the evaluation and participating in future trials like FN.

> I just think it should just continue, really. I think it's something that we should spread out bigger, get more schools on board. I appreciate it's an awkward turnaround because of the timescale, but yes, I would personally like to see it in as many schools as we can within our borough, because I just think that it really supports their curriculum. ... I think spreading it out more would be good - *Provider*

Teachers suggested that further support for schools on outreach to and recruitment of parents/carers could promote higher take-up and reduce attrition, as this had been challenging. They recommended simplifying the language used in recruitment materials to remove barriers, particularly for parents/carers with English as an additional language. Teachers also suggested involving providers in the parent/carer recruitment process. One teacher gave the example of a school organising a workshop with the provider to promote FN, which proved effective as it lent credibility and helped increase parent/carer buy-in. Teachers noted that allowing more time to recruit and sign-up parents/carers would also help.

Tutors suggested some minor adjustments to the length of the sessions and minor adaptations of the content to be ready for a larger-scale trial. They were broadly positive about the training, content and overall experience of delivering the intervention. They suggested that longer sessions and flexibility in tailoring content to schools' maths curriculum and children's maths abilities could improve future delivery. Their suggestions on content and materials included that the 'our maths journey' self-reflection booklet used by parents/carers should be discussed in the sessions or shared with tutors. The booklet included sections that allowed parents/carers and children to reflect on each session, think of ways to link sessions with the use of maths in daily life and rate their confidence in maths. They also noted that a list of resources needed across all sessions would be a helpful resource.

> It was great, it was really useful, all the resources and everything were really great, really useful, everything was set out and laid out was amazing… it would've been nice if we could've had a 'shopping list' of resources, we had to go week by week to see what we actually needed to purchase prior to the course - *Tutor*

These findings indicate that the intervention has a good level of trial readiness and could be successfully delivered at a larger scale. A focus on supporting schools to recruit parents/carers would be key for the intervention to be successfully scaled up.

4.8 Perceived outcomes

This section summarises the difference that participation in the course had on tutors, schools, parents/carers and children.

4.8.1 Perceived tutor outcomes

Tutors reported several positive gains from delivering FN, particularly increased knowledge and confidence in delivering family learning. Many had not previously delivered to parents/carers and/or children in school settings. Through delivering FN, tutors learned new approaches to engage and work with family learning groups. This was especially true for those who had been in the role of a tutor for less than 5 years. The intervention also enabled them to gain a better understanding of the maths curriculum for Key Stage 1. These experiences contributed to tutors feeling more confident overall about delivering family learning programmes in the future.

4.8.2 Perceived school outcomes

A key benefit for schools involved in FN was increased parental engagement. Teachers and senior school stakeholders explained that they had often struggled with engaging parents/carers in their children's education. The intervention was central in supporting teachers to build relationships with parents/carers and increase their involvement with the school. School stakeholders also reported that they intended to continue using family learning (with some interested in continuing FN and others interested in wider topics for family learning) as an approach to engage parents. This highlighted that the FN approach could have further applicability for schools.

A further benefit for schools focussed on the new relationship with the family learning provider. School staff reported that they would be likely to work with providers in the future to deliver similar, family learning programmes, given the positive effects on parental engagement.

4.8.3 Perceived parent/carer outcomes

Parents/carers were asked a series of questions to assess their level of engagement with their child's education and school. Table 25 presents the results. At baseline 53 out of 222 parents/carers (24%) from the treatment group and 51 out of 199 (26%) from the control group responded to these questions. At endline, 44 (20%) from the treatment group and 58 (29%) from the control group responded to these questions.

The analysis at baseline showed a generally high level of engagement among parent/carer respondents. At endline, engagement levels remained high and continued to show no statistically meaningful differences by treatment status. There were no meaningful differences between the treatment and control group at either time point. While improvements were observed for both groups, these changes were not statistically attributable to treatment. Treatment status did not predict changes in any of the indicators. Instead, across most indicators baseline engagement was a strong and positive predictor of endline engagement.

Table 25: Change in parental engagement by treatment group

Engagement indicator	Baseline/Endline	Treatment	Control
Discuss homework/learning with child (Daily/Weekly)	Baseline	50 (94%)	49 (96%)
Discuss homework/learning with child (Daily/Weekly)	Endline	42 (95%)	56 (97%)
Tracking child's progress at school (Daily/Weekly)	Baseline	25 ([u])	30 (59%)
Tracking child's progress at school (Daily/Weekly)	Endline	31 (70%)	40 (69%)
Confident helping child with school assignment (Very/Fairly confident)	Baseline	36 (68%)	37 (73%)
Confident helping child with school assignment (Very/Fairly confident)	Endline	39 (89%)	45 (78%)
Attend parent-teacher meeting (Always/Often)	Baseline	48 (91%)	50 (98%)
Attend parent-teacher meeting (Always/Often)	Endline	39 (89%)	55 (95%)
Engage with child's maths learning (Daily/ Weekly)	Baseline	39 (75%)	40 (78%)
Engage with child's maths learning (Daily/ Weekly)	Endline	41 (93%)	49 (86%)

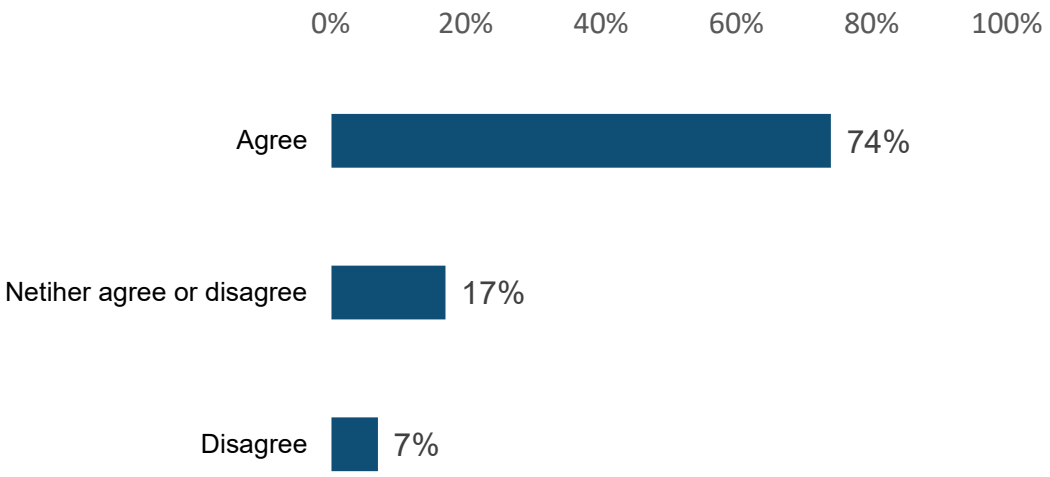
Note: shorthand [u] indicates suppression of percentages for low reliability where n < 30

Source: Baseline and endline survey of parents/carers. Base: All survey respondents, baseline N= 104, endline N = 102.

Confidence in working with numbers

Parents/carers gained confidence in their ability to use maths. The majority of parents/carers in the treatment group reported that the FN course increased their confidence in maths (74%, as shown in Figure 5), increased their ability to help their child with maths (88%, as shown in Figure 6) and shifted their attitude towards maths to a more positive one (78%, as shown in Figure 7). Additionally, 82% reported that the programme increased their willingness to attempt maths problems and 91% reported that the programme increased their understanding of maths. More detail on these findings can be found in the additional data tables.

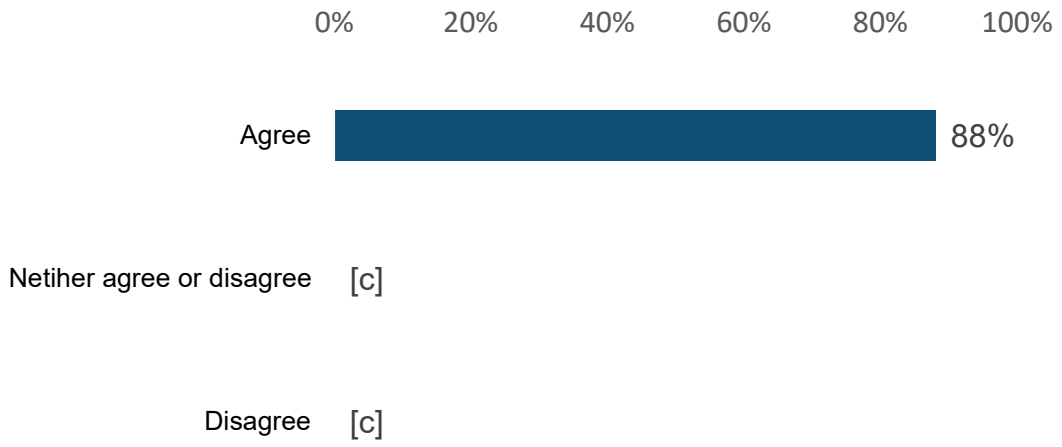
Figure 5: The programme increased your confidence at maths



Source: Endline parent/carer survey. Base: Endline FN treatment participants n=69

Notes: The chart shows net agreement, where 'agree' combines 'Strongly agree' and 'Tend to agree' and 'Disagree' combines 'Tend to disagree' and 'Strongly disagree'

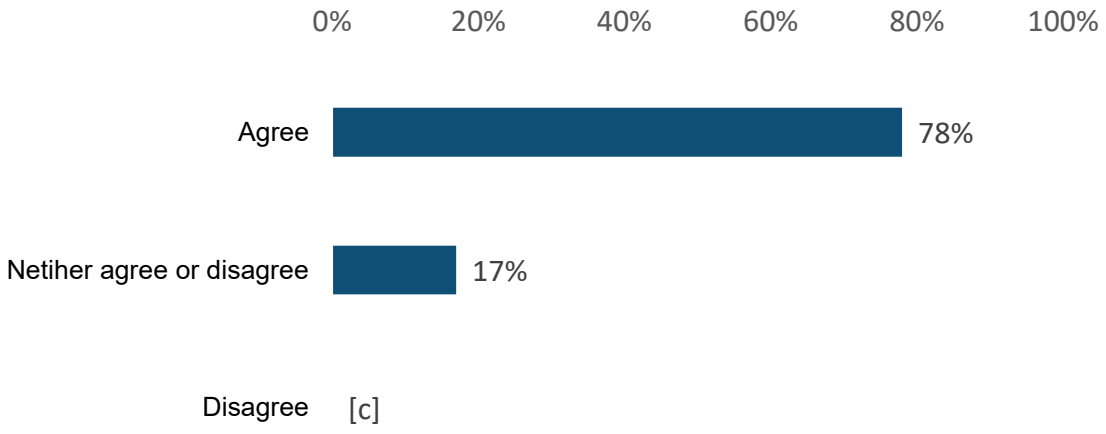
Figure 6: The programme increased your ability to help your child with maths



Source: Endline parent/carer survey. Base: Endline FN treatment participants n=69

Notes: The chart shows net agreement, where 'agree' combines 'Strongly agree' and 'Tend to agree' and 'Disagree' combines 'Tend to disagree' and 'Strongly disagree.

Figure 7: My attitude to maths is more positive following the course



Source: Endline parent/carer survey. Base: Endline FN treatment participants n=69

Notes: The chart shows net agreement, where 'agree' combines 'Strongly agree' and 'Tend to agree' and 'Disagree' combines 'Tend to disagree' and 'Strongly disagree.

Interview findings highlighted that the course enabled parents/carers to recognise and build on their existing maths capability. They explained that while they were familiar with

some of the topics covered, the FN intervention was particularly useful in refreshing and developing their understanding of the language of maths.

> Yes, definitely more of an understanding of the language. I felt like that was good for me, to have a little refresher, even if there wasn't loads of information, but it was just little snippets of things that I think, 'Oh, yes, I remember that now.' – *Treatment group parent/carer*

Parents/carers also gained skills to support their child's learning. In interviews, they explained that through the practical activities covered in the course, they had learned about different approaches to engage their children with maths. Parents/carers felt they were better able to support their children with their maths homework, and that they could do so in a way that was appropriate for their children's age.

Parents'/carers' improved confidence, more positive attitudes and skills developed through FN motivated them to consider signing up to other maths courses. While some parents/carers highlighted family and work commitments as potential barriers, many expressed interest in other family learning courses to support their child's learning, both in relation to maths and other subjects. Some were also considering further maths courses to improve their own maths skills.

> Our confidence was definitely 1 thing that really shone through, and I would just say off the back of that, and doing the coursework, it, sort of, sparked in my head to do the level 2 in maths, just to see if I can up my own confidence in my own learning. Because obviously there's a big difference between maths that you do as a teenager and as an adult compared to what you do as a 6 and 7-year-old. So, it, sort of, sparked a bit more confidence in me to sit down and look at level 2 – *Treatment group parent/carer*

Future plans

Regarding future course plans, 34% of treatment group respondents said they had either started or were about to start a course or training. A feature of the FN design was the distribution of information about available further maths courses for parents/carers to pursue after completing FN. Approximately 48% of treatment group parent/carer survey respondents said they had received this information and 48% said they had not.

4.8.4 Perceived child outcomes

Parents/carers interviewed reported that their children had developed more positive attitudes towards maths. The practical nature of the activities and home learning tasks was central to engaging children and sparking their interest in maths.

> The most important bit for me is… it's made my child have a love of maths if you like, because he can see it can be creative and not just a boring… a boring subject, we can bring sort of like arts and crafts into it and... I think that's really helped him. – *Treatment group parent/carer*

Parents/cares and tutor interviewees believed that children had also gained confidence, both within themselves and in relation to their maths abilities, which they observed through children's increasing levels of participation in the FN sessions.

5 Conclusions

In concluding this report, it is important to acknowledge that this was the first RCT for a numeracy intervention with adults and children in England. It was an important development for DfE to have tested the effectiveness of Family Numeracy learning approaches, and this trial demonstrates that is possible to lead intervention delivery and data collection involving both schools and providers within same setting, building confidence for future trialling of Family Numeracy interventions.

5.1 Key findings

The FN pilot trial found that the intervention had a strong and statistically significant impact on parents'/carers' progression to further maths courses, with 22 participants in the treatment group progressing compared to none in the control group. This represented an 18 percentage point increase attributable to the intervention after accounting for demographic and provider-level differences. The effect was even larger among parents/carers who met the minimum participation threshold, reinforcing the importance of attendance and home-learning engagement. Although a small number of parents/carers joined after randomisation, sensitivity analyses confirmed that the main impact findings were robust and not driven by this late-joining group.

Implementation was broadly successful. Delivery closely followed the product developer's guidance with only minor adjustments needed to suit learners' needs. Tutors engaged well with the training and reported enhanced confidence and understanding of family learning and Key Stage 1 maths. Parents'/carers' engagement was positive and many reported improved attitudes toward maths, greater confidence, and feeling better equipped to support their children's learning. Schools also observed increased parental engagement more generally. The evaluation findings indicated that being more capable of supporting their child was a strong motivator for parent/carer engagement, which in turn meant they also improved their own capabilities and built confidence and motivation to undertake further maths learning.

Overall, the FN intervention demonstrated a good level of trial readiness and has the potential to be delivered at a larger scale. To successfully scale up the intervention, support would need to be provided to schools during parent/carer recruitment.

5.2 Lessons learned for future delivery

Future delivery of the intervention would benefit from a stronger focus on practicality of recruitment of parents/carers and structural flexibility. The high withdrawal rate among schools indicates the difficulty in recruiting parents/carers. Therefore, for schools to take

part future delivery should allow for sufficient time and support for recruitment of parents/carers. Alternative delivery models (e.g. hybrid) could be considered to encourage participation of parents/carers. Findings suggest that the programme was delivered with fidelity, but tutors had to make minor adaptations for parents/carers with low English language skills and children with SEND. Tutors found the training material overall useful and generally provided positive feedback on the instructional videos but some suggested that these could have been shorter and more concise. For parents/carers key barriers were childcare commitments, limited session time and varied ability levels, which highlight the need for adaptable delivery structures. Tutors used strategies to overcome these barriers such as extending sessions to 90 minutes (instead of the initially planned hour). For future delivery these flexibilities can be built into the design that could lead to higher compliance among parents/carers. Overall, future delivery should enhance training efficiency and embed flexible delivery mechanisms so that the positive experiences reported by tutors and families can translate into more consistent and measurable impact.

5.3 Considerations for future research

The pilot trial was planned with a target of 28 clusters per arm, which was considered sufficient to detect a moderately large minimum detectable effect size (MDES) of 0.4, assuming a relatively high ICC of 0.20 and accounting for expected attrition. In practice, the study achieved 30 clusters per arm, and the observed ICC was 0.34, higher than the planned assumption, which gave an actual MDES of 0.48.The pilot produced an estimated effect size of 1.16 standard deviations, which was notably larger than typically expected in educational interventions. However, this large, realised effect size did not mean that the pilot trial functioned as a full-scale RCT, nor could the impact estimates be considered as confirmatory evidence.

It can be definitely said that the positive treatment effect is robust and did not happen by chance, but this trial was not powered to determine effectiveness, and the effect size cannot be taken as definitive. The magnitude of the effect size observed in this trial is unusual and remains unreliable due to small sample size of the pilot trial. Typically, a small sample size and underpowered pilot trial can lead to a large effect as such since the effect varies widely within a small sample size, as observed in this case, where the effect was 18 percentage points but the confidence interval was wide (ranging from 6 to 29 percentage points), indicating that the true effect could be anywhere in that range. Therefore, the large effect could be simply by chance even if the true effect was small, and this pilot trial was not powered to detect a small effect. Therefore, this pilot trial provided an indication of positive effect of the FN programme, but was mainly designed to assess feasibility, refine procedures, and generate reliable design parameters for a future definitive trial and the estimate of the treatment effect size remains unreliable.

To conduct a fully-powered trial that is able to determine the true effect size, taking into consideration the high ICC of 34%, an average cluster size of 7, the 17% school-level attrition observed in the pilot trial, and assuming a target effect size (Cohen's h) of 0.2, the number of schools required to run a full-scale RCT to identify the effectiveness of FN would be approximately 410. The sample size calculation for a fully powered trial should not be based on the effect size observed in the pilot trial since the effect size observed in the pilot trial is possibly inflated and could lead to severely underpowered full-scale trial that will not be able to detect the true effect.

There were two additional systematic issues that could have led to overestimation of the effect size. Firstly, the proportion of missing data on critical demographic variables could have contributed to the large effect size. Hence, future research should consider alternative strategies to collect this data at the onset of the trial (e.g. during sign-up). Secondly, it was observed that the effect of certain providers was statistically significant. This indicates that outcome varied widely by provider and future research should consider including a large pool of providers and put in place monitoring mechanisms to study if delivery is varying by providers.

Additionally, the intervention tested in this pilot trial embedded signposting towards future courses. Therefore, the control group did not receive any signposting beyond what they would have experienced as business-as-usual. This trial cannot detangle the effect of any additional signposting given as part of the FN intervention from the FN programme itself. However, future research could consider isolating the effect of both to understand which is driving the effect since information is a less costly intervention.

Finally, this 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).

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Appendix 1: Glossary

Absolute standardised differences: A measure used to check if the treatment and control groups had similar characteristics at the start of a study. It compares the difference between the groups in a standardised way. A result below 0.1 (or 10%) usually shows the groups were well-balanced.

Adult Education Budget (AEB): The AEB provides government funding for skills training for adults aged 19 and over in England. It covers basic English, maths and digital skills. In 2024, it was renamed the Adult Skills Fund.

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

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.

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 survey: An initial data collection exercise conducted via survey and completed before an intervention begins, to establish a reference point.

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.

Between cluster variance: The measure of variation in outcomes that occurs between different groups (or 'clusters') in a study (e.g. differences between providers). Larger values mean the clusters are more distinct from each other.

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, a study 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 existing 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.

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.

Complete separation: Complete separation is a situation where there are participants in the treatment group who have achieved an outcome but no-one in the control group has achieved that same outcome.

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.

Descriptive statistics: Statistics used to summarise and describe the main features of a dataset, such as the mean, median, and standard deviation.

Dummy indicators: Also known as dummy variables, these are binary variables (using 0s and 1s) created to include categorical information (like which region a provider is in) in a regression model.

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.

Embedding Maths in health and social care (Embedded Maths): An intervention to improve numeracy skills in adults by embedding mathematical concepts into the curriculum of Health and Social Care Level 2 qualifications.

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.

Family Numeracy (FN): A programme hosted by primary schools for parents/carers and their children to improve adult numeracy skills through family learning. Includes 12 hours of learning: 6 in-person group sessions and home learning activities.

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, equivalent to GCSE grade 1-3. FSQ Level 1 Maths is usually targeted at individuals who require a more applied or vocational approach to learning maths and is suitable for learners aged 16+ years in further education, apprenticeships, or adult learning.

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.

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): The ILR is an on-going collection of data about learners from training providers in the Further Education (FE) and Skills sector in England. 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): This is a fundamental principle for analysing the results of a randomised controlled trial. It means that all participants are analysed in the group to which they were originally randomised, regardless of whether they actually received the intervention, completed it, or complied with it. This method preserves the benefits of randomisation and avoids 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.

Intercept: In a regression model, the intercept is the predicted value of the outcome variable when all predictor variables are set to zero. It represents a baseline or starting point.

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.

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.

Intraclass correlation coefficients (ICC): 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 intra cluster 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.

Ipsos Data Portal: Ipsos Data Portal is the brand name of the data collection system used for these trials, also known as the Ipsos data collection portal.

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 grade 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.

Logistic link function: A mathematical function used in logistic regression to model the relationship between predictor variables and a binary outcome, ensuring the predicted value is a probability between 0 and 1.

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 maths 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.

Mayoral Strategic Authorities (MSAs): Regional governance bodies in England that replaces the previous Mayoral Combined Authority model. Led by a directly elected mayor, these authorities coordinate wide-scale economic growth, infrastructure, and public services across a defined geographical area without replacing local councils. There was a transition from Mayoral Combined Authorities to Mayoral Strategic Authorities (MSA) as part of the 2025's Devolution Bill. This reflects a shift in UK devolution, moving from bespoke arrangements to a uniformed statutory framework.

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

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.

Missing at Random (MAR) pattern: A situation where data is missing in a systematic way, but the pattern behind that situation is explained by other variables in your dataset. For example, if men were less likely than women to answer a question about their confidence, the data would be considered MAR because the reason for the missingness (gender) is a known, recorded variable. Because we can see this pattern, we can use statistical techniques to account for it during the analysis.

Missing Not at Random (MNAR): A situation where a data point is missing specifically because of the value itself. For example, if people with lower confidence scores are less likely to answer a confidence-related question. This is the most difficult type of missing data to handle because it introduces bias that is hard to detect.

Mixed-methods design: A research approach that integrates quantitative metrics (such as survey responses) with qualitative inquiry (such as interviews) to validate findings. By triangulating different data sources, researchers can overcome the limitations of a single method to reach more robust, nuanced conclusions.

Multimode: This refers to surveys that can be completed through different channels or modes, e.g. online or by telephone.

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.

Observational studies: Studies that observe what happens without assigning people to conditions (for example, tracking outcomes in naturally occurring groups). They are useful for describing patterns and associations but are weaker for evidencing causal claims.

Ordinal data: A type of categorical data where the categories have a natural, ordered relationship. For example, survey responses like 'No qualifications', 'Entry level', 'Level 1', 'Level 2', and 'Level 3 or above' are ordinal and follow that order.

Orthogonality: A statistical property in experimental design where the effects of different variables can be estimated independently of each other. A test of joint orthogonality is used to check if the randomisation process resulted in balanced groups.

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.

Probit regression analysis: This is a statistical technique used to model binary (yes/no) or ordinal outcomes. It predicts the probability that an outcome will occur based on a set of predictor variables.

Purposive sampling: A sampling technique where researchers deliberately select participants based on specific characteristics relevant to the study's goals, rather than at random.

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.

Qualification-bearing Maths course: This is a Maths course that, upon successful completion, results in a formal qualification.

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

Quasi-experimental: An evaluation design that attempts to estimate impact without using random assignment. Instead, it relies on statistical techniques (such as matching or difference-in-differences) to construct a comparison group that resembles the treatment group as closely as possible.

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 randomised controlled 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 check: An analysis to test whether the main results of a study hold up when the methods or assumptions are slightly changed.

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

Sample frame: The list or source from which a sample of participants is drawn.

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.

SEND learners: Those taking part in a course who have Special Educational Needs and/or Disabilities.

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 (mean). 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.

Stratified cluster randomisation: A research method that combines cluster randomisation with stratification to ensure balance among trial arms. Clusters (such as groups of people) are divided into distinct subgroups or ‘strata’ (for instance, region) before randomisation to ensure that each subgroup is appropriately represented in the treatment and control arms.

Technical Steering Group (TSG): A Technical Steering Group was established by DfE to provide advice, guidance and oversight of key design elements of the trials. They also had ownership of technical risks and oversight of final outputs and ethical considerations.

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.

Vector: In a statistical context, a vector is an ordered list of numbers, often representing a set of characteristics for a single participant or the coefficients in a regression model.

Within cluster variance: The measure of difference in outcomes that occurs among individuals within the same group or "cluster" (e.g. among different learners at the same provider).

Appendix 2: Intervention materials

Information Sessions and Training

July 2024 - Informational Session for Providers and Senior Leaders

- When: July 2024
- Where: Online
- Duration: 2.5 hours
- Who: Aimed at senior leaders in provider settings, family learning maths tutors, family learning managers, managers who coordinated the trial with schools

This session was run online by CfL with the aim to ensure providers understood how to:

- Engage with parents
- Set up the course/ intervention
- What's involved when running the intervention
- Benefits of taking part

September 2024 – School Briefing Session

- When: Sept 2024
- Where: Online and recording available
- Duration: 20-30 minutes
- Who: for schools, headteachers, Y2 teachers

This session was run online by CfL and was recorded for any schools who could not join. The session aimed to brief the schools of how the trial would run in their schools and a chance for any questions.

October 2024- Training for all tutors

- When: Oct 2024
- Where: Online
- Duration: 2.5 hours
- Who: for all Family Learning Maths tutors

Facilitator guide

Contents

Background

Campaign for Learning have been awarded a contract against the Multiply - What Works? strand to develop a family numeracy product that enables family learning where skills gains will be used to assess what works in the successful delivery of adult numeracy products and strengthen the evidence base and fill evidence gaps.

The goals of Multiply are to: increase the number of adults participating in maths quals/interventions up to Level 2; positive benefit to business where employees take part, an increase in employment and an increase in earnings; the perceived and actual difference in improved understanding and confidence in everyday maths.

Context

Family learning for maths is important because it not only contributes to academic success but also fosters a positive attitude towards learning, enhances problem-solving skills, and strengthens family bonds. It provides a holistic approach to education that goes beyond the classroom and into the daily lives of family members.

1. **Early Foundation:** Introducing maths concepts at an early age helps build a strong foundation for future learning. When families engage in maths activities together, children are more likely to develop positive attitudes toward maths and see it as an accessible and enjoyable subject.
2. **Real-World Application:** Learning maths as a family provides opportunities to apply mathematical concepts to real-life situations. Whether it's measuring ingredients while cooking, budgeting for a family holiday, or calculating distances during a road trip, these practical applications help demonstrate the relevance of maths in everyday life.

3. **Positive Attitude Towards Learning:** Family involvement in maths learning fosters a positive attitude toward learning in general. When children see their parents/carers and family members engaging with maths in a supportive and encouraging way, it promotes a growth mindset and a belief that learning is a lifelong and enjoyable process.
4. **Enhanced Problem-Solving Skills:** Maths is fundamentally about problem-solving. By working on maths problems and puzzles together, families can enhance their collective problem-solving skills. This collaborative approach helps children develop critical thinking skills and the ability to approach challenges with creativity and perseverance.
5. **Increased Confidence:** Family learning creates a supportive environment where children feel comfortable asking questions and seeking help. This boosts their confidence in tackling maths problems, and the positive reinforcement from family members can significantly impact their self-esteem and belief in their abilities.
6. **Improved Communication Skills:** Discussing maths concepts within the family promotes effective communication skills. Family members learn to articulate their thoughts, explain their reasoning, and listen to others' perspectives. This not only enhances maths-related communication but also contributes to overall communication skills.
7. **Strengthened Family Bonds:** Engaging in maths activities together fosters a sense of togetherness and strengthens family bonds. It provides an opportunity for quality time spent collaboratively, creating positive memories and shared experiences around learning.
8. **Preparation for Future Success:** A solid understanding of maths is crucial for success in various academic and professional fields. Family learning in maths can better prepare children for future educational and career opportunities by instilling a strong mathematical foundation.
9. **Life Skills Development:** Beyond academic success, maths is essential for developing practical life skills. From financial literacy to problem-solving in daily activities, understanding maths is crucial for navigating the challenges of adulthood. With the adults being involved in this process it will in turn, enhance their motivations to learn more.
10. **Cultural and Intergenerational Connection:** Maths transcends cultural and generational boundaries. Family learning in maths can be an opportunity to share diverse mathematical perspectives, solving problems in different ways, and appreciating the cultural richness of mathematical thinking.

Structure of programme

The programme consists of 6 sessions that standalone covering 3 main areas of maths: Number, Shape, Space and Measure and Statistics. The sessions will be a choice of 60 minutes or 90 minutes to allow for as much flexibility as possible. The repetition within the session will support familiarity within the programme and foster a supportive

environment that families will want to return to. Every session will have home learning takeaways so that the impact will extend further than the classroom. The sessions will be split where half of the session will be parents and carers only and the second part will incorporate families learning together. This is going to be for Key Stage 1 Year 2 and will link to the Functional Skills Level 1 for adults. Each session includes an icebreaker and confidence monitoring.

To ensure that there is progression for each family, they will complete a 'our maths journey' journal that will encourage reflection throughout the programme. The journal will be used by the families when attending a session to capture their reflections and consolidation of learning from the corresponding session.

Reflections and consolidation of learning

1. **Pre-Intervention Assessment:**
    - Ask participants to rate their confidence in various math-related skills on a scale (e.g., from 1 to 10).
    - Include questions about specific topics or types of problems they feel confident or less confident about.
    - Inquire about their general attitudes and feelings towards mathematics.
2. **Intervention Implementation:**
    - Implementation.
3. **Post-Intervention Assessment:**
    - Administer the same set of questions as in the pre-intervention assessment.
    - Compare the post-intervention responses with the pre-intervention responses to measure changes in confidence levels.
4. **Additional Feedback:**
    - Include open-ended questions to gather qualitative feedback on participants' experiences.
    - Ask about specific aspects of the intervention that positively or negatively influenced their confidence.

Health and Safety

On all occasions, health and safety is important to ensure that everyone feels safe and there are measures in place to mitigate any risks. You will have your own policies and procedures, but we have included some reminders for keeping everyone safe:

Policies and procedures: Make sure you have a copy of all relevant policies and procedures, i.e. Health and Safety, Fire Evacuation, Safeguarding. Make sure you have read and understood them, sharing key points with the parents/carers and offering regular reminders.

Risk assessment: are the activities within the programme covered by your existing risk assessment, or do you need to consider additional risks to enable you to safely deliver the programme?

Fire safety: Find out the Fire Safety procedure, routes and assembly point(s) and who the Fire Marshalls are.

First Aid: Find out where the nearest First Aid box is kept, who the First Aiders are and how to get First Aid support.

Safeguarding: Make sure you have the name and contact details for the Safeguarding Officer.

Signing in: Find out what the signing in procedure is for you and participating parents and carers and make sure this is followed.

Equality, Diversity and Inclusion

In designing our adult learning lesson plans, we are committed to fostering an inclusive, diverse, and equitable educational environment. Our mission is to create a space where all participants, regardless of background, experience a sense of belonging and respect. We value diversity in perspectives, experiences, and ideas, recognizing that a rich tapestry of backgrounds enriches the learning experience for everyone.

Our lesson plans are designed to be accessible to learners with diverse learning styles, abilities, and cultural backgrounds. We actively seek to incorporate content that reflects a variety of voices, experiences, and cultural contexts, fostering an inclusive curriculum that resonates with all participants.

We are dedicated to creating an atmosphere that promotes open dialogue, where individuals feel comfortable expressing themselves without fear of judgment. Our instructors are trained to be culturally responsive, understanding and valuing the unique contributions each participant brings to the learning community.

Furthermore, we actively address issues of discrimination or bias, ensuring that our classroom is a safe space for all. We strive to challenge stereotypes, promote understanding, and cultivate an atmosphere that celebrates the strengths inherent in our diverse community.

Through these commitments, we aim to empower our adult learners to embrace diversity, appreciate differences, and cultivate a respectful and inclusive community of lifelong learners.

Parental engagement

Parental engagement is crucial to the success of this programme. With any family learning group, communication is key: Establish clear and consistent communication channels between the school and families. This could include regular newsletters, emails, and/or an invitation from the children. To support this, we recommend doing an introductory session explaining how the sessions will work and how this will be implemented, highlighting the benefits to the children and the fun, engaging ways that the teaching approach will take. There can be an emphasis on the impact on the real-world applications of maths concepts and how examples will be shared of how maths is used in various professions and daily life, demonstrating its relevance beyond the classroom.

Maths anxiety can be triggered when learning with parents/carers if the learning environment becomes tense or overly focused on performance, creating pressure that hinders the student's confidence and enjoyment of the subject. Positive and supportive parental/carer involvement in maths education can play a crucial role in alleviating such anxiety by fostering a comfortable learning atmosphere.

If you notice parents/carers seeming tense, defensive or quieter than before, you may wish to consider a group or individual intervention to sensitively introduce a regulation technique. If you think the group is regulated enough, it can also act as an opportunity to explain the regulation method being used and how they can do this with their children.

It is also important to incorporate the following factors:

Create a Supportive Environment: Foster a welcoming and supportive atmosphere within the school. When parents/carers feel comfortable, they are more likely to engage with their child's education.

Feedback Mechanism: Establish a feedback mechanism for parents/carers to share their thoughts and concerns about the math program. This can be done through surveys, suggestion boxes, or regular meetings.

Celebrate Achievements: Acknowledge and celebrate effort and achievements. This could include recognition in school newsletters, certificates, or awards ceremonies.

Remember, effective family engagement is an ongoing process that requires consistent effort and communication. By involving parents/carers in their child's maths education, practitioners can create a supportive learning environment that extends beyond the classroom. Effective communication with parents/carers is a cornerstone of fostering a

positive and collaborative partnership between educators and families. Open and transparent communication establishes a supportive environment where information is exchanged respectfully, ensuring that both parties are well-informed and engaged in the child's educational journey. By actively listening to parents' perspectives, acknowledging their insights, and providing clear and empathetic communication, educators can create a space that promotes understanding and cooperation.

Overall aims of the programme

Increased confidence and application of Maths vocabulary by parents and carers, measured via teacher session observation

Increased ability to embed Maths learning in everyday situations by parents and carers, measured by parent and child journal self-report

Increased confidence and application of Maths vocabulary by children, measured by parent and child journal self-report

Increase in Maths comprehension in topics of number, shape, space and measure and statistics by both parents/ carers and children, measured by teacher observation, and formal progression in learning for parent/carer and child.

Increase in collaboration and working with school to support the child's learning by parent and carers, measured by parent and child journal self-report

Progression

Progressing from this family learning programme to either formal qualifications or further employment opportunities or enhancing their current role involves a transformative journey rich in both academic and practical experiences. Beginning with a strong foundation laid by the family learning programme, learners embark on a path marked by continuous growth and exploration. They delve deeper into mathematical concepts, honing problem-solving skills, and nurturing a passion for the subject. Throughout this progression, the ethos instilled by the family learning programme—of curiosity, collaboration, and lifelong learning—remains a guiding light, shaping not only their mathematical skills gained but also their professional journey and contributions to society.

In each session, the facilitator is encouraged to reiterate this at both the start and the end of the session, signposting to their local offer in terms of qualifications and through the indication of how this programme has been embedded within their own life throughout the completion of ‘our maths journey’.

Each facilitator will need to find the appropriate course to signpost learners to due to differing local offers and needs of the group.

The following links may be useful:

- https://www.skillsforcareers.education.gov.uk/pages/skills-for-life
- https://educationhub.blog.gov.uk/2021/10/27/everything-you-need-to-know-about-the-new-multiply-programme/
- https://www.skillsforcareers.education.gov.uk/pages/training-choice/multiply

Appendix 3: Cost data

Providers that signed up to the FN trial were eligible to receive funding based on the number of parents/carers and the number of additional guided learning hours. For FN, schools were randomly allocated to either the trial treatment group or control group. Providers received the same funding whether schools were in the treatment or control group. Table A1 provides details regarding the provider funding allocations for both treatment and control groups.

Table A 1: Provider funding

Funding area	Funding level and notes
Admin premium	10% premium of the planned parent/carer numbers (based on intervention costs) to support parent/carer recruitment, submission of trial data, trial training and travel expenses
Intervention costs	£7.20 per additional guided learning hour Based on number of additional guided learning hours per trial and recruited number of parents/carers To support delivery of the intervention Plus, area cost and disadvantage cost uplifts added, as applicable
Additional benefits	The provider received a £1000 one-off payment Tutors received free, high-quality training on how to implement the lessons

Schools that recruited 8 or more eligible parents/carers onto the FN Programme received a £500 incentive for participating in the trial.

The grant funding spends (which includes the total spend of the intervention cost (including uplifts) and one-off incentive payments) for the for the FN trial was £119,470

(£29,000 of this was provided to schools). The training cost was £24,470. This resulted in a total delivery spend of £143,940.[17]

The product developer for the FN Programme was Campaign for Learning (CfL). CfL's key deliverables included the following:

- employ / resource training staff
- create training materials
- support training signups to ensure all teachers on the trial sign up
- track who has attended which training
- send attendance records to evaluator and to Empowering Education (Multiply Team)
- available for feedback and questions from teachers and providers if they have any issues during training and during trial
- Quality Assure the delivery of the training through development of survey
- continued trial design input
- engagement webinar attendance
- additional recruitment support
- ad hoc support to teachers and providers throughout the trial and training
- deliver the training sessions as per the agreed training schedule

In addition to the key deliverables, CfL developed a Multiply schools pack, which included content (plan and shared review, content development, design team briefing, assurance) and design work (colouring and imagery, pattern work) as well as extra training. The extra training included programme set up and support (additional recruitment support, managing bookings, administration of training attendance and coordination with Etio and IES, ad hoc support to teachers and providers throughout the trial and training) and 10 training sessions with 2.5 hours of delivery and 2.5 hours of admin.

17 Figures rounded to the nearest £10

Appendix 4: Research instruments

IPE research questions

Eight key research questions, and associated sub questions, were addressed through the implementation and process evaluation (IPE), and these are set out here.

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

This question explored some of the key assumptions identified in the theory of change, to support interpretation of the findings of the impact evaluation. Research examined and documented the extent of training and support delivered to and taken up by tutors, as well as the content they then delivered to parents/carers and children, and the extent to which this reflected intervention intentions.

- **a.** How much of the pre-delivery Family Numeracy training do tutors attend? Do they use the instructional videos alongside training?
- **b.** To what extent do tutors implement the Family Numeracy content and activities in their sessions at schools?
- **c.** Do tutors in any way adapt the content and activities? What adaptations are made? Why? How do these deviate from the prescribed curriculum?
- **d.** How feasible is it for tutors to implement the intervention as intended? Where this does not happen, what are the reasons for this?
- **e.** How many classes are delivered (are large groups split into multiple classes)?

2. To what extent, if at all, do schools offer family learning sessions or support for parents/carers to understand the Key Stage 1 curriculum?

This question supported interpretation of the impact evaluation findings, by providing evidence on how different Family Numeracy is from any practice by schools to support parents/carers and home learning.

- **a.** How, if at all, do schools engage and support parents/carers to support children's learning in Key Stage 1 maths curriculum or curriculum in general?
- **b.** To what extent, if at all, do home learning tasks issued by schools for children resonate with the Family Numeracy home learning requirements?

3. How do tutors experience delivering the intervention? How do schools and teaching staff respond to intervention delivery?

This question generated evidence on intervention delivery and on some enablers and barriers of the intervention being effective. This evidence could be used to inform any future roll out of the intervention. It also covered any perceived outcomes the intervention had for tutors and teachers including experiences of being part of a trial, that might be used to aid design and delivery of future trials in a Family Learning context.

a. To what extent do tutors and teachers understand the rationale for the intervention? To what extent do they agree with this?

b. How do tutors feel about being asked to deliver Family Numeracy? What is the level of buy-in among tutors, what affects buy-in?

c. To what extent did the incentive influence providers' and schools' decisions to participate? Would they have taken part without it?

d. How do teachers feel about Family Numeracy being delivered in their school context? What is the level of buy-in to releasing children to attend these sessions? What affects buy-in?

e. Were schools recruited via family learning teams, or did they reach out directly to Etio? How do tutors and teachers feel about the Family Numeracy content and approach? How well does the format work?

f. How easy or difficult is it for tutors to deliver Family Numeracy, and integrate it into the school day to achieve parent and child attendance for the planned hours?

g. Are any of the maths content areas easier or harder for tutors to deliver than others?

h. What do tutors and teachers see as the key difference of Family Numeracy content and approach compared to other practices to support adult and child numeracy (few programmes are likely to tackle both so we will explore what they compare it to as well as how it compares)?

i. How do tutors and teachers feel about taking part in a trial?

j. To what extent do perceived outcomes vary by the characteristics of the tutor, for instance years of experience, prior maths confidence/ capability?

k. To what extent are perceived outcomes influenced by school or training organisation context and particularly strategic support in schools?

l. How, if at all, could the intervention be further developed or improved to enable wider rollout?

4. What are tutors' experiences of the training and support provided to deliver the intervention?

This question gathered evidence on the accessibility and effectiveness of the pre-training, tools and resources to inform future delivery of the intervention. It also provided evidence about what outcomes, if any, the intervention had for tutors.

a. To what extent do tutors feel the training, tools, and resources support enable them to deliver the intervention effectively? What could be improved?

b. How useful are each of the support strands (training, tools, resources)? What works well and less well? What could be improved?

c. What, if anything, do tutors gain from completing the training? For example, understanding of the potential benefits of family learning to achieving adult maths outcomes.

d. Do tutors (and teachers) believe Family Numeracy can or should be translated for other Key Stages? Why/ why not?

5. What are parents'/carers' experiences of the intervention?

The purpose of this question was to gather evidence on parents'/carers' experiences of receiving Family Numeracy content and activities. It also focussed on the mechanisms behind the intervention, the enablers and barriers to the intervention being effective.

a. What motivates parents/carers to sign up for the Family Numeracy trial? What do they hope to gain? Is supporting their child's maths learning their key motivation?

b. How engaged are parents/carers with the Family Numeracy sessions? How engaged are they with the Family Numeracy content and home learning activities?

c. To what extent are parents/carers aware of and understand the maths in Key Stage 1 curriculum? Do they use maths in the workplace? How are they using maths generally?

d. How easy or difficult is it to use their learning to support their child's Key Stage 2 learning? Are some areas harder or easier to support?

e. What do parents/carers think works well and less well about the sessions and home learning tasks? What could be improved?

6. What outcomes does the intervention have for parents/carers and children?

This question gathered evidence on perceived outcomes, and the mechanisms behind the achievement or otherwise of these outcomes. It also explored perceived outcomes that were not measured as part of the impact evaluation.

a. What, if anything, do parents/carers feel they gain from the Family Numeracy content and activities? (confidence, positive attitudes, willingness/ skills to

support their child's learning, understanding of how maths applies in their jobs, increased self-efficacy)

b. What, if anything, do parents/carers feel their children gain from the Family Numeracy content and activities? (confidence, positive attitudes)?

c. Does Family Numeracy create interest in parents/carers for taking up a maths course? What is the underlying motivation – is continuing to support their child a key motivator?

d. Does Family Numeracy create interest in parents/carers for taking up any other courses? What is the underlying motivation – is continuing to support their child a key motivator?

e. Does Family Numeracy lead to unplanned/ unanticipated outcomes for parents/carers and/or children? What are these? How do they emerge?

f. How does Family Numeracy specifically, make a difference to perceived outcomes for parents/carers and for children?

g. What elements are most useful, and are perceived to make the most difference?

h. To what extent do parent and child outcomes vary by individual characteristics?

7. What enablers and barriers are there to parent and child engagement and participation in the intervention?

This question gathered evidence on enablers and barriers to the intervention being effective to help inform future delivery of the intervention. Enablers and barriers may relate to: learning provider characteristics and actions, school context, tutor or teacher attitudes/actions, course content, course delivery, parent and child attendance, etc.

8. What lessons may be learned for future delivery of the intervention for a larger scale trial?

The purpose of this question was to identify lessons learned relating to future delivery and potential larger trial of the intervention.

a. Is it plausible to believe the intervention can be rolled out with fidelity on a larger scale?

b. What, if anything, should be changed or updated for future recruitment to a family numeracy trial?

c. What, if anything, should be updated or changed for future delivery or wider rollout?

Topic guides

Multiply Family Numeracy: Parent Interview Topic Guide (Treatment)

Introduction

Thank you for agreeing to participate in an interview about your experiences of the Family Numeracy course.

I work for the Institute for Employment Studies (IES), an independent, not-for-profit research organisation. Along with Ipsos, the Department for Education has appointed our research team to evaluate Family Numeracy.

Today's discussion will cover your motivations for enrolling in the Family Numeracy course, your experiences of the course, any outcomes you think came from it, and the barriers and enablers to participating in your course. The interview will last 30 - 45 minutes. We are able to offer you a £30 shopping voucher for taking part, and we will discuss the details of this at the end.

Participation is voluntary, and you can stop at any time. If you do not want to answer a question, let me know and we can move on. Before we begin, I want to run through some general information with you:

- Everything discussed in the interview will only be used for this research.
- We will write a report based on our findings for the Department for Education. The information you share today will be anonymised in the report. Please feel free to answer the questions as openly and honestly as possible
- With your permission, I would like to record the interview, which would then be transcribed – I'll take notes as we talk, but it helps to have a backup. The recording and transcription will be stored securely and will only be accessible to the IES team. It will be deleted 6 months after the end of the project, currently expected to be September 2026.
- Do you have any questions?
- Please confirm that you understand what the research is about, how your data will be used and stored, and that you are happy to take part in the interview.

Researcher note: Priority questions are marked with ★.

Background

We would like to learn more about you and your background in relation to maths.

1. What was your experience of learning maths prior to taking part in the Family Numeracy course? (RQ 5c) «

[Probe for any previous positive/negative experiences of maths.]

2. Before taking part in Family Numeracy, to what extent were you aware of and how much did you understand about the maths in Key Stage 1 curriculum? (RQ 5c)
3. For those currently working, how / in what ways do you use maths in your job (if at all)? (RQ 5c) «
4. How / in what ways do you use maths generally from day to day? (RQ 5c) «
5. What motivated you to take the Family Numeracy course? (RQ 5a) «

[If needed, probe if supporting their child's maths learning was their key motivation.]

6. What were you hoping to gain from taking part in the course? (RQ 5a) «
7. Since enrolling in Family Numeracy, have you considered enrolling in any other types of maths learning just for yourself? If yes, probe for further details on why and the types of learning they are considering. If not, why not?
8. Does your school offer any other support to help you understand your children's Key Stage 1 maths curriculum or curriculum in general? To what extent have you engaged with this support? Why / why not? (RQ 2a)
9. How far do the home learning tasks that your school provides for children align with the Family Numeracy home learning requirements? (RQ 2b)

[Probe for building understanding of concepts at home with their child. Probe for how / in what ways the school tasks align or differ from the Family Numeracy home learning requirements.]

Experience of course

In this section, we are interested in your feedback on the Family Numeracy course sessions as well as the home learning tasks.

10. Have you attended all your course sessions so far? (RQ 5b) «

[Probe: for barriers/facilitators to attending sessions]

[Probe: were certain sessions (e.g. Shape, Space and Measure; Number; Statistics) more/less engaging? Check for Family Numeracy approaches]

11. Have you completed all of the home learning tasks with your child so far? (RQ 5b) «

[Probe for barriers – related to broader factors or the tasks themselves?]

[Probe: were there certain activities that were more/less engaging?]

12. What was your overall impression of the course sessions? (RQ 6g) «

[Probe on delivery mode, quality of teaching, volume of content, how did it compare to original expectations]

    a. Which parts of the course sessions, if any, did you find the most useful? Why?
    a. What parts of the course sessions, if any, did you find not to be useful? Why?

b. Probe for topics covered in the 6 Family Numeracy sessions: numbers, 'shape, space and measure' and statistics.

13. What was your overall impression of the home learning tasks? (RQ 6g) «
    a. Which parts of the home learning tasks, if any, did you find the most useful? Why?
    b. Which parts of the home learning tasks, if any, did you find not to be useful? Why?

[Probe for topics covered in the 6 Family Numeracy sessions: numbers, 'shape, space and measure' and statistics.]

14. How, if at all, did this course differ to other maths courses you've taken before?
15. How, if at all, has this course impacted the environment of your child's school?
16. What worked well about the course sessions? Why do you say that? (RQ 5e)
17. What worked less well about the course sessions? Do you have any recommendations as to how they could be improved? (RQ 5e)
18. What worked well about the home learning tasks? Why do you say that? (RQ 5e)
19. What worked less well about the home leaning tasks? Do you have any recommendations as to how they could be improved? Why do you say that? (RQ 5e)

Outcomes

Next, we would like to hear about what (if anything) you and your child have gained from taking part in the Family Numeracy course.

20. What, if anything, did you gain from the Family Numeracy course? (RQs 6a, 6f) «

[*Probe for:*

- *Improved maths outcomes*
- *Improved understanding of maths vocabulary*
- *Confidence*
- *Positive attitudes*
- *Increased motivation*
- *Willingness to support your child's learning*
- *Skills to support your child's learning*
- *Deeper understanding and retention of knowledge*
- *Deeper understanding of how maths applies to your job [if applicable]*
- *Improved skills for employment and life tasks*

For each outcome referenced, probe on which elements of the course contributed / what their view is based on / whether they have any examples.]

21. What, if anything, has your child gained from the Family Numeracy course so far? (RQs 6b, 6f) «

[Probe for:

- *Confidence*
- *Positive attitudes*

For each outcome referenced, probe on which elements of the course contributed / what their view is based on / whether they have any examples.]

22. To what extent have you used the learning from the course to support your child's Key Stage 1 learning? How easy or difficult has this been? (RQ 5d)
    - Are some areas harder to support?
    - Are some areas easier to support?
23. What, if anything, did you learn in the course that you didn't expect? (RQ 6e) «
24. What, if any, negative impacts or challenges did you experience during the course?
25. Did the Family Numeracy course lead to any other unplanned or unanticipated outcomes for you and/or your child? (RQ 6e) «

    [Probe for: What are these? How do they emerge?]

26. How, if at all, has participating in this course affected your interest in continuing with further maths courses or any other course? (RQs 6c, 6d) «

[Probe for what is the underlying motivation – is continuing to support their child a key motivator?]

Enablers and barriers to participation

In this last section, we would like to discuss anything that may have helped or hindered your participation in the Family Numeracy course.

27. What challenges, if any, did you experience in accessing or attending your course? (RQ 7)
28. Is there anything that we have not already discussed that you think could be improved about the course and why? (RQs 7, 8c) «

    [Probe if there was anything hindering their participation that could be improved. Other potential topics here include parent and child attendance, tutor/teacher attitudes/actions, school context, course content, course delivery.]

29. Would you recommend the Family Numeracy course to other parents? (RQ 8a) «

    [Probe on how they were recruited and how Family Numeracy was delivered] (RQs 8b. 8c)

    c. IF YES, would you recommend any changes to the course sessions or home learning tasks before the Family Numeracy course is offered to others?

Demographics

We are nearly at the end of the interview. Before we finish, I just wanted to ask you for a few personal details about yourself. This is to help us make sure we are speaking to a range of different people. If you don't want to answer some of these questions, that is completely fine and you can just say "Prefer not to say".

30. How old are you?
31. How many children under the age of 18 do you have parental responsibility for and/or legal guardianship? By parental responsibility we mean providing a home and protecting and maintaining a child.
32. Are you currently doing any type of paid work? This could be working as an employee part-time (30 hours or less per week), working as an employee full-time (more than 30 hours per week), self-employed or freelance or any other kind of paid work
    a. *[If not currently doing any type of paid work]* What best describes your current situation?

       [Probe for:

       - *Temporarily away from work ill, on holiday or temporarily laid off*
       - *On maternity or paternity leave*
       - *Retired (whether receiving pension or not)*
       - *Studying*
       - *Looking after home or family*
       - *Long-term sick or disabled*
       - *Waiting to start a job already accepted*
       - *Unemployed and looking for work*
       - *Unemployed and not looking for work*
       - *Something else]*
33. How would you describe your gender?
34. How would you describe your ethnicity?
35. Do you consider yourself to have a disability or a long-term health condition?
36. What is the highest qualification that you hold? This can be from school, college, or something from work.

    [Probe for qualification level.]

Closing

Anything else to add?

Confirm email details for receiving the gift voucher. Check if this can be sent to the email address they have on file.

Remind interviewee about the endline survey (link shared by Ipsos).

Thank you, and close

Multiply Family Numeracy: Parent Interview Topic Guide (Control)

Introduction

Thank you for agreeing to participate in an interview about your experiences of the Family Numeracy course.

I work for the Institute for Employment Studies (IES), an independent, not-for-profit research organisation. Along with Ipsos, the Department for Education has appointed our research team to evaluate the Family Numeracy programme.

Today's discussion will cover your motivations for enrolling in the Family Numeracy course. The interview will last approximately 30 minutes. We are able to offer you a £30 shopping voucher for taking part, and we will discuss the details of this at the end.

Participation is voluntary, and you can stop at any time. If you do not want to answer a question, let me know and we can move on. Before we begin, I want to run through some general information with you:

- Everything discussed in the interview will only be used for this research.
- We will write a report based on our findings for the Department for Education. The information you share today will be anonymised in the report. Please feel free to answer the questions as openly and honestly as possible
- With your permission, I would like to record the interview, which would then be transcribed – I'll take notes as we talk, but it helps to have a backup. The recording and transcription will be stored securely and will only be accessible to the IES team. It will be deleted 6 months after the end of the project, currently expected to be September 2026.
- Do you have any questions?
- Please confirm that you understand what the research is about, how your data will be used and stored, and that you are happy to take part in the interview.

Researcher note: parents/carers in the control group will take part in Family Numeracy in the autumn term.

Background

We would like to learn more about you and your background as it relates to maths.

37. What was your experience of learning maths prior to signing up to the Family Numeracy course? (RQ 5c)

[Probe for any previous positive/negative experiences of maths.]

38. To what extent are you aware of and understand the maths in the Key Stage 1 curriculum? (RQ 5c)

39. For those currently working, how / in what ways do you use maths in your job (if at all)? (RQ 5c)

40. How / in what ways do you use maths generally from day to day? (RQ 5c)

Engagement with Family Numeracy programme / other types of support

41. What motivated you to sign up for the Family Numeracy course? (RQ 5a)

    [If needed, probe if supporting their child's maths learning was their key motivation.]

42. What are/were you hoping to gain from taking part in the Family Numeracy course? (RQ 5a)

43. Have you recently considered enrolling in any other type of maths learning just for yourself? Why / why not?

    [If yes, probe for further details on why and the types of learning they are considering. If not, why not?]

44. What (if any) other types of support does your school offer to help you understand your children's Key Stage 1 maths curriculum or curriculum in general? To what extent have you engaged with this support? Why / why not? (RQ 2a)

45. How has it been being a part of a trial?

    [Probe on: information provided, enrolment process, research requirements (surveys and interviews), randomisation, views on having to wait until autumn to receive the course]

Demographics

We are nearly at the end of the interview. Before we finish, I just wanted to ask you for a few personal details about yourself. This is to help us make sure we are speaking to a range of different people. If you don't want to answer some of these questions, that is completely fine and you can just say "Prefer not to say".

46. How old are you?

47. How many children under the age of 18 do you have parental responsibility for and/or legal guardianship? By parental responsibility we mean providing a home and protecting and maintaining a child.

48. Are you currently doing any type of paid work? This could be working as an employee part-time (30 hours or less per week), working as an employee full-time (more than 30 hours per week), self-employed or freelance or any other kind of paid work.

    b. [If not currently doing any type of paid work] What best describes your current situation?

[Probe for:

- *Temporarily away from work ill, on holiday or temporarily laid off*
- *On maternity or paternity leave*
- *Retired (whether receiving pension or not)*
- *Studying*
- *Looking after home or family*
- *Long-term sick or disabled*
- *Waiting to start a job already accepted*
- *Unemployed and looking for work*
- *Unemployed and not looking for work*
- *Something else]*

49. How would you describe your gender?
50. How would you describe your ethnicity?
51. Do you consider yourself to have a disability or a long-term health condition?
52. What is the highest qualification that you hold? This can be from school, college, or something from work.

    [Probe for qualification level.]

Closing

Anything else to add?

Confirm email details for receiving the gift voucher. Check if this can be sent to the email address they have on file.

Remind interviewee about the endline survey (link shared by Ipsos).

Thank you, and close

Multiply Family Numeracy: Provider Topic Guide

Introduction

Thank you for agreeing to participate in an interview about the Family Numeracy course.

I work for the Institute for Employment Studies (IES), an independent, not-for-profit research organisation. Along with Ipsos, the Department for Education has appointed our research team to evaluate the Family Numeracy course.

The evaluation aims to assess the feasibility of implementing the Family Numeracy course and the effectiveness of the teaching methods and strategies. It aims to understand what methods are effective in improving adult numeracy skills.

Today's discussion will cover your experiences of the Family Numeracy session delivery, parent/carer experiences of the programme, outcomes, enablers and barriers to engagement and participation, and your experiences of being part of the trial and evaluation. The interview will most likely last 30 to 45 minutes.

Participation is voluntary, and you can stop at any time. If you do not want to answer a question, let me know and we can move on. Before we begin, I want to run through some general information with you:

1) Everything discussed in the interview will only be used for this research.

2) We will write a report based on our findings for the Department for Education and this will be published on the GOV.UK website. The information you share today will be anonymised in the report. Please feel free to answer the questions as openly and honestly as possible

3) With your permission, I would like to record the interview, which would then be transcribed – I'll take notes as we talk, but it helps to have a backup. The recording and transcription will be stored securely and will only be accessible to the IES team. It will be deleted 6 months after the end of the project, currently expected to be September 2026.

4) Do you have any questions?

5) Please confirm that you understand what the research is about, how your data will be used and stored, and that you are happy to take part in the interview.

Researcher note: Priority questions are marked with «.

Background

To start, we would like to learn more about you and your professional background.

1. Please, can you share your job title and your main responsibilities?

2. How many years have you been working with your current company?
   -

3. How many years have you been working in adult education / maths education?

4. What type of provision do you usually offer?

[Probe if it is always family learning / maths]

5. Has your company delivered any other type of maths courses or programmes? If so, what types of programmes were these and to whom were they delivered? (RQ 3k) «

6. Has your company delivered any other type of family learning courses or programmes? If so, what types of programmes were these and to whom were they delivered? (RQ 3k) «

7. Can you describe the typical backgrounds of your adult learners? (RQ 3l)
[Probe for demographics such as income level, age, gender, ethnicity, prior education, etc.]

8. a. How / in what ways have schools supported you to deliver the Family Numeracy course? (RQ 3j)
[Probe for any type of strategic support from schools.]
b. What more / different types of support (if any) would you have liked from schools?
[Probe for any type of strategic support from schools.]
c. Are these schools you have worked with before? «
d. Do you think you will continue to work with these schools in the future? Why do you say that?

Fidelity and delivery

Now, we would like to understand how far delivery happened as intended and the reasons for any differences.

9. What is your understanding of the rationale for the Family Numeracy programme? How clear was this to you? (RQ 3a) «

    a. To what extent do you agree with this?

[Probe: If interviewee is unsure about the rationale, mention that the Family Numeracy programme has been designed to help parents/carers better support their child's maths learning as well as increase their own maths confidence and willingness and interest to progress to more formal maths provision.]

[Probe for level of buy-in / what affects buy-in]

10. What are your general thoughts about the Family Numeracy course content and approach? (RQ 3f) «

[Probe for what has worked well / less well and why. Is there anything that could be improved?]

Being a part of a trial

Now, we are interested in hearing about your experiences of being a part of the Family Numeracy trial.

11. How clear have the communications been regarding supporting the trial, including the information in the trial-readiness packs? What aspects worked well, and what could have been improved? (RQ 3j) «

[Probe also for any pre-trial briefings and discussions or meetings outside of the training.]

12. Did you make the decision to take part in the Family Numeracy trial? If so, what motivated you to agree to take part in the trial? (RQ 3j) «
    - If not, what motivated your organisation to take part?

[Probe for whether the incentive / payment per learner influenced decision to participate.]

Lessons for Future Delivery

Lastly, we would like to gather your thoughts on any lessons that could be applied to future delivery of the Family Numeracy course.

13. How / in what ways does the Family Numeracy approach provide benefits for increasing adult maths capability? Why do you say that?

14. What (if anything) do you think could be improved for future delivery if the Family Numeracy programme was offered to other schools? (RQ 3m, 8c) «

15. What are your thoughts on participating in future research or trials like this? Why would you want to be involved, or why not? (RQ 3m)

16. Do you think that Family Numeracy can or should be translated for other Key Stages? (Why/why not?) (RQs 3m, 4d) «

Anything else to add?

Thank and close

Multiply Family Numeracy: Tutor Topic Guide

Introduction

Thank you for agreeing to participate in an interview about the Family Numeracy course.

I work for the Institute for Employment Studies (IES), an independent, not-for-profit research organisation. Along with Ipsos, the Department for Education has appointed our research team to evaluate the Family Numeracy course.

The evaluation aims to assess the feasibility of implementing the Family Numeracy course and the effectiveness of the teaching methods and strategies. It aims to understand what methods are effective in improving adult numeracy skills.

Today's discussion will cover your experiences of the Family Numeracy session delivery, parent/carer experiences of the programme, outcomes, enablers and barriers to engagement and participation, and your experiences of being part of the trial and evaluation. The interview will most likely last 40 - 50 minutes.

Participation is voluntary, and you can stop at any time. If you do not want to answer a question, let me know and we can move on. Before we begin, I want to run through some general information with you:

1) Everything discussed in the interview will only be used for this research.

2) We will write a report based on our findings for the Department for Education and this will be published on the GOV.UK website. The information you share today will be anonymised in the report. Please feel free to answer the questions as openly and honestly as possible

3) With your permission, I would like to record the interview, which would then be transcribed – I'll take notes as we talk, but it helps to have a backup. The recording and transcription will be stored securely and will only be accessible to the IES team. It will be deleted 6 months after the end of the project, currently expected to be September 2026.

4) Do you have any questions?

5) Please confirm that you understand what the research is about, how your data will be used and stored, and that you are happy to take part in the interview.

Researcher note: Priority questions are marked with «.

Background

To start, we would like to learn more about you and your professional background.

17. How many years have you been a tutor? (RQ 3k) «

18. What type of provision do you usually offer?
[Probe if it is always family learning / maths]

19. Before delivering the Family Numeracy programme, how confident were you in maths? (RQ 3k) «

20. Have you delivered any other type of maths courses or programmes? If so, what types of programmes were these and to whom were they delivered? (RQ 3k) «

21. Can you describe the size and structure of your organisation? (RQ 3l)

22. What is the catchment area for your organisation? (RQ 3l)

23. Can you describe the typical backgrounds of your adult learners? (RQ 3l)

24. a. Did you feel that the schools you are working with on the trial have provided support for the Family Numeracy course? (RQ 3j)
    b. Are these schools you have worked with before? «
    c. Do you think you will continue to work with these schools in the future?

Training and support to deliver Family Numeracy

Next, we would like to discuss the training and support that was available to you to help with the delivery of the Family Numeracy course.

25. How useful was the pre-delivery Family Numeracy training? (RQ 1a) «
    [Probe: Check briefly whether they attended the session or watched the recording. If not, what were the barriers to attendance, and what, if anything, could have enabled them to attend?]

26. Did you have access to any instructional videos alongside the training? (RQ 1a)

27. [If YES to Q10] Did you use the instructional videos alongside the training? (RQ 1a)

28. [If YES to Q11] How useful or otherwise were they? How / could they be improved? (RQ 1a)

29. Is there anything you would change or improve about the pre-delivery training sessions?

30. Were the training, tools and resources helpful for you to deliver Family Numeracy effectively? How useful were they? (RQs 4a, 4b) «

31. Is there anything you would improve about the training, tools and resources? What worked well / less well? (RQ 4b) «

32. What, if anything, did you gain from completing the training? (RQ 4c)
[Probe for understanding of the potential benefits of family learning to achieving adult maths outcomes and how far the training equipped them to confidently deliver the course.]

Fidelity and delivery

Now, we would like to understand how far delivery happened as intended and the reasons for any differences.

33. What is your understanding of the rationale for the Family Numeracy programme? How clear was this to you? (RQ 3a) «

    b. To what extent do you agree with this?

[Probe: If interviewee is unsure about the rationale, mention that the Family Numeracy programme has been designed to help parents/carers better support their child's maths learning as well as increase their own maths confidence and willingness and interest to progress to more formal maths provision.]

34. How did you feel about being asked to deliver the Family Numeracy programme? Why do you say that? (RQ 3b)

[Probe for level of buy-in / what affects buy-in]

35. What do you think about the Family Numeracy content and approach so far? (RQ 3f) «

36. How well or otherwise do you think the format of the Family Numeracy programme works? Why do you say that? (RQ 3f) «

[Probe: How easy or difficult has this been? Can you provide examples?]

53. How easy or difficult was it to schedule the Family Numeracy sessions to ensure both parents/carers and children could attend the planned hours? (RQs 1b, 3g) «
Researcher note: would be helpful to understand if sessions were delivered during the school day or after school hours. If during the school day, was it easy or difficult to integrate?

54. Were any of the maths content areas easier or more difficult to deliver than others? (RQs 1d, 3h)

[Probe: Why do you say that? Can you provide any examples?]

55. We are interested in how and in what ways you implemented the Family Numeracy content and activities in the sessions you delivered within schools. (RQ 1b)
    a. What has worked well / less well in delivering the sessions, e.g. any specific activities that have worked particularly well / less well? (RQ 1d)
    b. How far was your delivery of Family Numeracy in line with the guidance provided? What are the reasons for any differences? «
    c. Did you adapt any of the content or activities that make up the Family Numeracy programme? (RQ 1c) «
        i. If yes, what adaptations were made?
        ii. Why?
    d. How did these differ from the prescribed curriculum?
    e. How well do you think these adaptations have worked? Why do you think that?

24. In general, how feasible was it for you to deliver the Family Numeracy programme as intended? (RQ 1d) «
Probe: Where this did not happen, what were the reasons

25. How many classes of Family Numeracy have you delivered? Were large groups split into multiple classes? (RQ 1d, 1e)

    a. If not, find out how many / which ones were delivered and reason/s why not.

26. What are the key differences between the Family Numeracy content and approach compared to other practices to support adult and child numeracy? (RQ 3i) «

[Researcher note: Few programmes are likely to tackle both so explore what they compare it to and how it compares.]

Being a part of a trial

Now, we are interested in hearing about your experiences of being a part of the Family Numeracy trial.

27. How clear have the communications been regarding supporting the trial, including the information in the trial-readiness packs? What aspects worked well, and what could have been improved? (RQ 3j) «

[Probe also for any pre-trial briefings and discussions or meetings outside of the training.]

28. Were you involved in the decision to take part in the Family Numeracy trial? If so, what motivated you to agree to take part in the trial? (RQ 3j)

[Probe for whether the incentive influenced decision to participate.] «

29. How did you find the experience of collecting data on the attendance of parents/carers on the course and sharing this via the Ipsos Online Portal? What worked well / less well? Are there any aspects that you think could have been improved? (RQ 3j)

30. Will you be delivering Family Numeracy in the autumn? *[IF YES,]* how do you feel about delivering the course in different terms?

Outcomes

Next, we would like discuss outcomes from the Family Numeracy course.

31. What (if anything) do you think parents/carers have learned or gained so far from taking part in the Family Numeracy sessions and activities? (RQ 6a) «

•

[Probe for any changes in parent/carer attitudes, confidence and willingness to support their child in the Family Numeracy sessions.

For each outcome referenced, probe on why they think that / what their view is based on / whether they have any evidence / examples.]

32. What have you gained, if anything, from delivering the Family Numeracy programme so far? «
    [Probe: own confidence and knowledge in their teaching, own understanding of topics?]

33. Do you think there are any groups of parents/carers for which the Family Numeracy sessions are.....? *(Probe for ESOL)*
    a. more suited to?
    b. less suited to?
    [Probe: Why do you think that / what is this view based on?]

34. Did the Family Numeracy sessions and activities lead to any unexpected outcomes for parents/carers (positive or negative)? (RQ 6d)

Facilitators and barriers to delivery and participation

Our next couple of questions concern aspects that either helped or hindered delivery and participation in the Family Numeracy course.

35. Have you faced any challenges or barriers to delivering the Family Numeracy sessions and activities as intended? How / could these be overcome? (RQ 7) «

[Probe for:

a. *Course content*
b. *Staffing*
c. *Parent and child attendance*
d. *Parent and child attitudes or confidence]*

36. Have you observed any facilitators or barriers to parents/carers and children participating in the Family Numeracy programme? (RQ 7) «

Lessons for Future Delivery

Lastly, we would like to gather your thoughts on any lessons that could be applied to future delivery of the course.

37. Would you recommend delivering Family Numeracy sessions to other adult learning providers? (Why/why not?) (RQs 3m, 8a) «

38. What (if anything) do you think could be improved for future delivery if the Family Numeracy programme was offered to other schools? (RQ 3m, 8c) «

-

39. What (if anything) should be changed or updated for future recruitment to a Family Numeracy trial?

40. What are your thoughts on participating in future research or trials like this? Why would you want to be involved, or why not? (RQ 3m)

41. Do you think that Family Numeracy can or should be translated for other Key Stages? (Why/why not?) (RQs 3m, 4d) «

Anything else to add?

Thank and close

Multiply Family Numeracy: School Senior Staff Topic Guide

Introduction

Thank you for agreeing to take part in this interview about the Family Numeracy programme. The Institute for Employment Studies (IES), in collaboration with Ipsos and funded by Department for Education (DfE), are now carrying out an evaluation of the programme.

The aim of this part of the evaluation is to provide insights into how the Family Numeracy programme has been delivered, and how it has been experienced by schools.

As part of this evaluation, we will also be interviewing parents/carers and tutors who have taken part in the Family Learning programme as well as a few individuals from the Campaign for Learning and Etio.

Our discussion today will cover:

- Some background about your teaching and your maths experience
- Your views and experiences of Family Numeracy

The interview will take around 30 minutes.

Before we begin, I want to run through some general information with you:

- Participation in the interview is completely voluntary.
- Everything discussed in the interview will be treated in confidence and only used for the purposes of this research. The information you provide will only be viewed by the research team.
- Have you received/read the information sheet about this project, and do you have any questions about it?
- You can stop the interview at any time, either to end it or to take a break. You don't need to answer any questions you are not comfortable with.
- The findings will be reported to the DfE and published anonymously on the gov.uk website, and we won't discuss what you say with anyone outside the research team.
- With your permission, I would like to record the interview, no-one outside of the research team will have access to the recordings and it will be deleted 6 months after the end of the project, currently expected to be September 2026.
- Please feel free to answer the questions as openly and honestly as possible. We want the research to provide meaningful insights into the intervention and how it can be improved. There are no wrong answers.

Do you have any questions? Are you happy to take part and have me record the interview?

Researcher note: Priority questions are marked with «.

Background

To start, we would like to learn more about you and your teaching background.

1. Can you tell me a bit about your professional background and role at your school? «

   [Probe: Years teaching, any leadership roles, do they have a particular specialism in maths]

2. Can you tell me a bit about the school you teach in?

[Probe: Size, ethos (including about commitment to evaluations or research), profile of students, supportive environment]

3. How, if at all, does your school engage and support parents/carers to support their children's learning in Key Stage 1 maths curriculum or curriculum in general? (RQ 2a)

   [Probe the following if they do: levels of engagement of parents/carers in any support offered]

4. When you were initially introduced to the Family Numeracy course, did you understand the rationale for it? (RQ 3a)

   [Probe: How did they feel about it, were they supportive? If interviewee is unsure about the rationale, mention that the Family Numeracy programme has been designed to help parents/carers better support their child's maths learning as well as increase their own maths confidence and willingness and interest to progress to more formal maths provision.]

5. We are keen to hear about your role/involvement in the Family Numeracy trial. Please, can you describe: «

   Discussions / decision-making about whether your school would take part in the trial. If involved in the decision, what motivated you to agree to take part?

   If not involved in the decision, who was the primary contact/person involved in the decision to take part? (RQ 3j)

6. To what extent did the incentive influence your school's decision to participate (would your school have taken part without it)? « (RQ 3c)

7. How did your school become engaged and recruited to the Family Numeracy trial? « (RQ 3e)

   [Probe for:

   Steps involved from first hearing about the trial to signing up

   Information sessions/webinars about the trial run by Etio / DfE / Ipsos]

8. How did the recruitment of parents/carers for Family Numeracy go?

   [Probe for enablers and barriers to recruiting parents/carers as well as any challenges faced and approaches to overcome them]

9. What has been your experience of transferring parent/child enrolment data to Ipsos via the Ipsos Data portal been? What has worked well, less well and why with this process? What could be improved?

10. How did liaising with providers to book programme dates go?

Family Numeracy Delivery

In this next section, we would like to discuss the delivery of the Family Numeracy course.

11. In general, how has working with the learning provider delivering the Family Numeracy programme gone so far? To what extent has this been in line with your expectations? Why / why not? «

    [Probe reasons why if the course hasn't met expectations and if collaborating has been successful and if the programme has been running smoothly.]

12. How did booking times for delivery of the Family Numeracy course go? Did the Family Numeracy course start when you initially expected it to?

13. To your knowledge, were there any challenges or barriers to delivering the Family Numeracy course as intended? (RQ 1d)

    [Probe: Course content, course format, staffing, parent/carer attendance, parent/carer barriers such as SEND or language barriers, parent/carer confidence. How might these be overcome?]

Outcomes and Reflections

Now, we would like to hear about your thoughts on any outcomes from the Family Numeracy course and your overall reflections on the course.

Outcomes for Schools

14. Do you find the Family Numeracy programme to be useful within your school? Why do you say that? «

    [If needed, probe for whether the Family Numeracy programme was a good addition to their offer for parents/carers, if it was well received by parents/carers/children and other staff members]

15. Has your opinion changed as to whether Family Numeracy is needed or useful within your school? Why do you say that?

    [Probe: Are they more or less positive about it now, what changed their mind, are they more or less likely to adopt now?]

16. What, if anything, do you feel you have gained from the experience of having the Family Numeracy programme delivered at your school? «

    [Probe: Do you think you will likely maintain your relationship with the learning provider for other programmes in the future?]

Thinking to the Future

17. Do you think this course could or should be delivered at other schools? Why do you say that? (RQ 8a) «

18. What, if anything, should be changed or updated for future recruitment of schools to a Family Numeracy trial? (RQ 8b) «

19. What, if anything, should be changed or updated for future recruitment of parents/carers to a Family Numeracy trial? (RQ 8b) «

20. Do you think Family Numeracy could or should be translated for other Key Stages? Why/ why not? (RQ 4d) «

Taking part in the evaluation

[If timing becomes a problem, this section can be covered briefly, or, if necessary, left out]

Lastly, we would like to hear about your experiences taking part in the evaluation of Family Numeracy.

21. How effectively was the trial and the trial requirements communicated to you? Why do you say that? (RQ 3j) «

22. Was there anything that worked particularly well / could have been improved? *e.g. trial readiness packs, pre-trial briefings, discussions or meetings outside of the training*? (RQ 3j) «

Do they have anything to add that we've not covered but they think is important?

Remind interviewee that IES will be asking for teacher assessed grades as a part of the evaluation.

Stop recording, thank and close.

Multiply Family Numeracy: Teacher Topic Guide (Treatment)

Introduction

Thank you for agreeing to take part in this interview about the Family Numeracy programme. The Institute for Employment Studies (IES), in collaboration with Ipsos and funded by Department for Education (DfE), are now carrying out an evaluation of the programme.

The aim of this part of the evaluation is to provide insights into how the Family Numeracy programme has been delivered, and how it has been experienced by teachers and parents/carers.

As part of this evaluation, we will also be interviewing parents/carers and tutors who have taken part in the Family Learning programme.

Our discussion today will cover:

- Some background about your teaching and your maths experience
- Your views and experiences of Family Numeracy
- Your views on how parents/carers experienced Family Numeracy

The interview will take around 30 - 40 minutes.

Before we begin, I want to run through some general information with you:

- Participation in the interview is completely voluntary.
- Everything discussed in the interview will be treated in confidence and only used for the purposes of this research. The information you provide will only be viewed by the research team.
- Have you received/read the information sheet about this project, and do you have any questions about it?
- You can stop the interview at any time, either to end it or to take a break. You don't need to answer any questions you are not comfortable with.
- The findings will be reported to the DfE and published anonymously on the gov.uk website, and we won't discuss what you say with anyone outside the research team.
- With your permission, I would like to record the interview, no-one outside of the research team will have access to the recordings and it will be deleted 6 months after the end of the project, currently expected to be September 2026.
- Please feel free to answer the questions as openly and honestly as possible. We want the research to provide meaningful insights into the intervention and how it can be improved. There are no wrong answers.

Do you have any questions? Are you happy to take part and have me record the interview?

Researcher note: Priority questions are marked with «.

Background

To start, we would like to learn more about you and your teaching background.

6. Can you tell me a bit about your professional background and role at your school? «

   [Probe: Years teaching, any leadership roles, do they have a particular specialism in maths]

7. Can you tell me a bit about the school you teach in?

   [Probe: Size, ethos (including about commitment to evaluations or research), profile of students, supportive environment]

8. How, if at all, does your school engage and support parents/carers to support their children's learning in Key Stage 1 maths curriculum or curriculum in general? (RQ 2a)

[Probe the following if they do: levels of engagement of parents/carers in any support offered]

9. When you were initially introduced to the Family Numeracy course, did you understand the rationale for it? (RQ 3a)

[Probe: How did they feel about it, were they supportive? If interviewee is unsure about the rationale, mention that the Family Numeracy programme has been designed to help parents/carers better support their child's maths learning as well as increase their own maths confidence and willingness and interest to progress to more formal maths provision.]

10. We are keen in hearing about your role/involvement in the Family Numeracy trial. Please, can you describe: «

    Discussions / decision-making about whether your school would take part in the trial. If involved in the decision, what motivated you to agree to take part?

    If not involved in the decision, who was the primary contact/person involved in the decision to take part? (RQ 3j)

Family Numeracy Delivery

In this next section, we would like to discuss the delivery of the Family Numeracy course.

11. What do you think about having FE tutors delivering the course? Did you understand the rationale behind this?

    - Have there been any unexpected consequences from having FE tutors deliver the course?

      [Probe for any misconceptions picked up by learners that then had to be corrected.]

12. To your knowledge, have there been any challenges or barriers to delivering the Family Numeracy course as intended so far? (RQ 1d) «

    [Probe: Course content, course format, staffing, parent/carer attendance, parent/carer barriers such as SEND or language barriers, parent/carer confidence. How might these be overcome?]

13. What has been the process for releasing children from class to attend Family Numeracy sessions? How well or otherwise has this worked? (RQ 1d)

    [Probe: impact on children, impact on class, impact on general school day]

14. a. Are you familiar with the home learning content being delivered through the Family Numeracy programme?

    b. If yes, how far does the Family Numeracy home learning align or complement the home learning assigned by your school? (RQ 2b) «

[Probe for any differences.]

15. What are the key differences and similarities between the Family Numeracy content and approach compared to other practices to support adult and child numeracy? (RQ 3i) «

[Researcher note: Few programmes are likely to tackle both so explore what they compare it to and how it compares.]

Outcomes and Reflections

Now, we would like to hear about your thoughts on any outcomes from the Family Numeracy course and your overall reflections on the course.

Outcomes For Parents/Carers

16. How / in what ways do you think the Family Numeracy course has impacted parents/carers? Why do you say that / what is that view based on? (RQ 6a) «

[Probe: increased/decreased confidence/understanding/improved skills or progression into further maths?]

Outcomes For Children

17. How / in what ways do you think the Family Numeracy course has impacted children in your classroom? Why do you say that / what is that view based on?

[Probe: increased/decreased confidence/attitudes towards maths?]

Outcomes for Teachers

18. Do you find the Family Numeracy programme to be useful within your school? «

19. Has your opinion changed as to whether this type of programme is needed or useful within your school?

[Probe: Are they more or less positive about it now, what changed their mind, are they more or less likely to adopt now?]

20. What, if anything, do you feel you have gained from the experience of having Family Numeracy at your school? «

Taking part in the evaluation

[If timing becomes a problem, this section can be covered briefly, or, if necessary, left out]

Lastly, we would like to hear about your experiences taking part in the evaluation of Family Numeracy.

21. How was the trial communicated to you? (RQ 3j) «

22. What support, if any, were you given by your school to take part in the research? Were you happy with it? (RQ 3j) «

23. As a part of the evaluation, we will be asking you to share teacher assessed grades for the term before and the term of the intervention. Please, can you explain how you assess your pupils' math ability? This will help us understand the best way to incorporate this element into our analysis. «

24. Was there anything that worked particularly well / could have been improved? *e.g. trial readiness packs, pre-trial briefings, discussions or meetings outside of the training*? (RQ 3j) «

Do they have anything to add that we've not covered but they think is important?

If you haven't already, remind interviewee that IES will be asking for teacher assessed grades as a part of the evaluation.

Stop recording, thank and close.

Multiply Family Numeracy: Teacher Topic Guide (Control)

Introduction

Thank you for agreeing to take part in this interview about the Family Numeracy programme. The Institute for Employment Studies (IES), in collaboration with Ipsos and funded by Department for Education (DfE), are now carrying out an evaluation of the programme.

The aim of this part of the evaluation is to provide insights into how the Family Numeracy programme has been delivered and how it has been experienced by teachers and parents/carers.

As part of this evaluation, we will also be interviewing parents/carers and tutors who have taken part in the programme.

Our discussion today will cover:

- Some background about your teaching, the courses you teach and your maths experience
- Your views and experiences of Family Numeracy
- Your views on how parents/carers experienced Family Numeracy

The interview will take around 20 - 30 minutes.

Before we begin, I want to run through some general information with you:

- Have you received/accessed the information sheet about this project, and do you have any questions about it?
- Participation in the interview is completely voluntary.

- Everything discussed in the interview will be treated in confidence and only used for the purposes of this research. The information you provide will only be viewed by the research team.
- You can stop the interview at any time, either to end it or to take a break. You don't need to answer any questions you are not comfortable with.
- The findings will be reported to the DfE and published anonymously on the gov.uk website, and we won't discuss what you say with anyone outside the research team.
- With your permission, I would like to record the interview, no-one outside of the research team will have access to the recordings and it will be deleted 6 months after the end of the project, currently expected to be September 2026.
- Please feel free to answer the questions as openly and honestly as possible. We want the research to provide meaningful insights into the intervention and how it can be improved. There are no wrong answers.

Do you have any questions? Are you happy to take part and have me record the interview?

Background

To start, we would like to learn more about you and your teaching background.

25. Can you tell me a bit about your professional background and role at your school?

    [Probe: Years teaching, any leadership roles, teach any other subjects, do they have a particular specialism in maths]

26. Can you tell me a bit about the school you teach in?

    [Probe: Size, ethos (including about commitment to evaluations or research), profile of students, supportive environment]

27. How, if at all, does your school engage and support parents/carers to support their children's learning in Key Stage 1 maths curriculum or curriculum in general? (RQ 2a)

[Probe the following if they do: levels of engagement of parents/carers in any support offered]

28. When you were initially introduced to it, did you understand the rationale for the Family Numeracy course? (RQ 3a)

    [Probe: How did they feel about it, were they supportive?]

29. Please, can you describe your role/involvement in the Family Numeracy trial?

    [Probe for:

Discussions / decision-making about whether their school would take part in the trial. If involved in the decision, what motivated them to agree to take part? (RQ 3j)

If not involved in the decision, who was the primary contact/person involved in the decision to take part?

Views on being put on a waitlist and their observation of what this will mean for future parent engagement]

Family Numeracy Delivery Expectations

Next, we would like to discuss your expectations for the Family Numeracy course delivery.

30. Do you know what topics the Family Numeracy course covers?

31. To your knowledge, do you foresee any challenges or barriers to delivering the Family Numeracy course as intended? (RQ 1d)

    [Probe: Course content, course format, staffing, student attendance, student barriers such as SEND or language barriers, student confidence. How might these be overcome?]

32. To your knowledge, what kind of home learning tasks are issued by your school for children concerning numeracy? Do they often involve parent engagement? (RQ 2b)

33. We are interested in the different approaches numeracy programmes can take in schools. To your knowledge, have you or your school been involved in any other programmes that support both adult and child numeracy? (RQ 3i)

[Researcher note: Few programmes are likely to tackle both (like Family Numeracy does) so explore what they compare it to and how it compares.]

Taking part in the evaluation

Lastly, we would like to hear about your experiences taking part in the evaluation of Family Numeracy.

34. How was the trial communicated to you? (RQ 3j)

35. What support, if any, were you given by your school to take part in the trial? Were you happy with it? (RQ 3j)

36. As a part of the evaluation, we will be asking you to share teacher assessed grades for the term before and the term of the intervention. Please, can you explain how you assess your pupils' math ability? This will help us understand the best way to incorporate this element into our analysis.

37. Was there anything that worked particularly well / could have been improved? *e.g. trial readiness packs, pre-trial briefings, discussions or meetings outside of the training*? (RQ 3j)

Do you have anything to add that we've not covered but you think is important for the evaluation?

If you haven't already, remind interviewee that IES will be asking for teacher assessed grades as a part of the evaluation.

Stop recording, thank and close.

Evaluation of Family Numeracy: Programme Stakeholders – Campaign for Learning (CfL)

Researcher note:

- ***Campaign for Learning (CfL)*** *are a national centre for family learning, and they are the developers of the Family Numeracy programme.*

Introduction

Thank you for agreeing to take part in this interview. The Institute for Employment Studies (IES), in collaboration with Ipsos and funded by Department for Education (DfE), are carrying out an evaluation of the Family Numeracy course.

The aim of this part of the evaluation is to provide insights into how the Family Numeracy programme has been designed and deployed, including any learnings for the future of the course.

As part of this evaluation, we will also be interviewing teachers, tutors and parents/carers who have been involved in delivering the Family Numeracy Pilot RCT.

Our discussion today will cover:

- Some background about the commissioning of the trial
- Your views and experiences of the trial design and roll out process

The interview will take around 30 minutes.

Before we begin, I want to run through some general information with you:

- Have you received/accessed the information sheet about this project, and do you have any questions about it?
- Participation with the interview is completely voluntary.
- Everything discussed in the interview will be treated in confidence and only used for the purposes of this research, The information you provide will only be viewed by the research team.

- You can stop the interview at any time, either to end it or to take a break. You don't need to answer any questions you are not comfortable with.
- The findings will be reported and published anonymously, and we won't discuss what you say with anyone outside the research team.
- With your permission, I would like to record the interview. No-one outside of the research team will have access to the recordings, and it will be deleted 6 months after the end of the project, currently expected to be September 2026.
- If afterwards you decide you do not want us to use what you have shared, please email HYPERLINK "mailto:familynumeracy@employment-studies.co.uk"familynumeracy@employment-studies.co.uk and ask us to delete your data. This can be done up to 2 weeks after our conversation has taken place.
- Please feel free to answer the questions as openly and honestly as possible. We want the research to provide meaningful insights into the intervention and how it can be improved. There are no wrong answers.

Do you have any questions? Are you happy to take part and have me record the interview?

Background, trial involvement and design

1. Can you tell me a bit about your role within Campaign for Learning? How long have you been in this role?
2. How / in what ways were you involved in the Family Numeracy trial – design/research/recruitment, etc.?

   [Probe for how big the team was that worked on it and what their role was within the team. Were they on the team right from the start? Also probe for involvement in:

   - *Intervention design and Theory of Change development*
   - *Recruitment of providers (e.g. involvement in events with Etio)*
   - *Design of learning resources*
   - *Design and delivery of training, any additional support for tutors]*

   Researcher note: Select the following 2 questions based involvement discussed in Q2:

3. Can you tell me about your experience of supporting Etio on the recruitment of schools and providers to the trial?
4. Can you tell me about the process of designing the training, plans for sessions and materials for the Family Numeracy programme?
   - What informed the design? Existing evidence, existing programmes?

- What worked well / less well? Are there any aspects that you think could have been improved?

5. How did you ensure the training, plans for sessions and materials were 'trial ready', that is, sufficiently high quality to be rolled out?

    Probe for:

    i. *Key considerations?*

    ii. *Whether/how they involved tutors and parents/carers in the process, e.g. piloting materials?*

        1. *If so, what feedback did they receive? Any adjustments based on feedback?*

6. What feedback, if any, did you receive from schools about the trial resources you shared with them?

[Probe for experiences of developing and sharing these resources and if they received any questions from schools about them]

Delivery

Tutor training in the beginning

7. Did you deliver or observe tutor training for the Family Numeracy trial? If so, what training did you deliver/observe?

8. (If YES to Q7) Can you please tell me about your experience of delivering the training sessions?

    Probe for:

    i. *Tutor understanding of materials/concepts for Family Numeracy*

    ii. *Level of consistency in delivery*

    iii. *Differences between types of providers*

    iv. *Attendance – any barriers?*

    v. *Engagement*

    vi. *Format (online)*

9. (If YES to Q7) Were there any challenges to delivering the training? If so, what were they and what approaches were taken to overcoming them?

10. (If YES to Q7) What factors, if any, made it easier for you to deliver the training?

11. 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 feedback?

Additional support to tutors

12. Can you please tell me about any other support you provided to tutors outside of the training sessions?

    Probe for: phone/email, regular/ad hoc

13. What were the challenges, if any, to providing this support to tutors?
14. What factors, if any, made it easier for you to provide this support to tutors?
15. What feedback, if any, did you receive from tutors about this support?

Perspectives on the views of tutors

16. When running the training sessions, what was the response from the tutors to the format and methodology that was being used?

17. Overall, from your perspective, how engaged were tutors/providers in the trial? What makes you say that?

18. How did tutors/providers initially find the Family Numeracy approach?
    - Similar or different to previous practices?

Views on the trial and lessons learned

19. To what extent would you want to be involved in future research or trials like this? Why do you say that?

20. Do you think that Family Numeracy has had any impact on the understanding of family learning in schools and providers? Why do you say that?

21. What lessons have you learned from working on the Family Numeracy trial that could inform future trials?

22. Do you think that the Family Numeracy programme could be rolled out on a larger scale in future? Why/why not?

    Probe for delivering as intended, resourcing, necessary adjustments

23. How / in what ways do you think schools and adult education providers could be encouraged to participate in more trials like this in the future? What measures could be taken?

24. What best practices would you recommend for future trials based on your experiences?

Anything else to add?

Thank and close

Evaluation of Family Numeracy: Programme Stakeholders – Etio

Researcher note:

- ***Etio** have been responsible for recruiting the providers of the Family Numeracy programme, and they manage all provider contracts.*

Introduction

Thank you for agreeing to take part in this interview. The Institute for Employment Studies (IES), in collaboration with Ipsos and funded by Department for Education (DfE), are now carrying out an evaluation of the Family Numeracy course.

The aim of this part of the evaluation is to provide insights into how the Family Numeracy trial has been designed and deployed, including any learnings for the future of the course.

As part of this evaluation, we will also be interviewing teachers, tutors and parents/carers who have been involved in Family Numeracy.

Our discussion today will cover:

- Some background about the commissioning of the trial
- Your views and experiences of the trial design and roll out process
- Your views and experiences of the delivery of the intervention

The interview will take around 30 minutes.

Before we begin, I want to run through some general information with you:

- Have you received/accessed the information sheet about this project and do you have any questions about it?
- Participation with the interview is completely voluntary.
- Everything discussed in the interview will be treated in confidence and only used for the purposes of this research, The information you provide will only be viewed by the research team.

- You can stop the interview at any time, either to end it or to take a break. You don't need to answer any questions you are not comfortable with.
- The findings will be reported and published anonymously, and we won't discuss what you say with anyone outside the research team.
- With your permission, I would like to record the interview. No one outside of the research team will have access to the recordings, and it will be deleted 6 months after the end of the project, currently expected to be September 2026.
- If afterwards you decide you do not want us to use what you have shared, please email HYPERLINK "mailto:familynumeracy@employment-studies.co.uk"familynumeracy@employment-studies.co.uk and ask us to delete your data. This can be done up to 2 weeks after our conversation has taken place.
- Please feel free to answer the questions as openly and honestly as possible. We want the research to provide meaningful insights into the intervention and how it can be improved. There are no wrong answers.

Do you have any questions? Are you happy to take part and have me record the interview?

Background information

25. Can you tell me a bit about your role within Etio? How long have you been in your role?

26. How were you involved in the Family Numeracy project – design/research/recruitment, etc.?

[Probe for how big the team was that worked on it and what their role was within the team. Were they on the team right from the start?]

Marketing and promotions

27. What marketing strategies were used to promote the Family Numeracy trial? (e.g. social media: X, LinkedIn, sector newsletters, publications, attendance at events, etc)

28. Which strategies proved most effective in attracting providers? What worked less well? What are the learning points?

    [Prompts:

    - *What informed your choice of marketing and promotion activities? Based on experience in the sector/best practice/piloting?*
    - *What were some common questions during initial engagement phase; how were they addressed?*
    - *Did your approach change during the campaign? What were the reasons for this?*
    - *What difference (if any) did the support from Campaign for Learning make?]*

29. Were any particular messages or themes resonating well / less well with potential providers? What were these messages?

Recruitment

30. What were the main challenges faced in recruiting providers to the Family Numeracy trial?

31. Did making direct calls to schools who could opt in, which you could then match with a provider, work well? Did you adapt your approach in any other ways in response to challenges when recruiting?

32. a. When recruiting providers and schools for the Family Numeracy course, what sort of questions, issues or barriers were raised about the programme?

    b. Do you know whether challenges were at an organisational or individual level? (Probe for time needed for training, lack of teacher time, confidence in teachers, any push back from course leaders, etc.)

    c. What worked well/less when converting initial enquiries / EOIs into sign-ups/participation in the Family Numeracy trial?

33. What approximate rate of attrition did you see between providers initially signing up for this programme and then withdrawing?

    - What were the main reasons for providers to withdraw after signing up?

34. What approximate rate of attrition did you see between schools initially signing up for this programme and then withdrawing?

    - What were the main reasons for schools to withdraw after signing up?

35. Were there any particular factors that influenced providers' or schools' decisions to participate in the trial?

36. If Family Numeracy is to be delivered to more schools in the future, are there any changes that need to be made to the intervention format or content that might increase adoption?

37. Is there anything else about the experience of delivering Family Numeracy that we haven't discussed that you think is relevant to understanding the issues/challenges surrounding delivery?

Communication with providers and schools following recruitment

38. Describe the process after providers signed up for the trial and before the trial started. What communications did providers receive, and how often?

39. How and when were the trial readiness packs distributed to the providers, schools and learners?

40. What feedback did you receive from providers about the trial readiness packs? Were there any aspects that were particularly well / less well received?

41. How often and when did you conduct calls to keep in touch with providers and schools? What was covered during these calls? Did you contact providers and schools outside of these calls?

Contracting and compliance

42. Can you describe the process for contracting with providers? What worked well / less well? Are there any lessons to inform contracting for this type of programme in future?

43. How did managing the process behind the financing per learner in schools go? What worked well / less well?

44. What strategies did you use to ensure providers adhered to the study requirements? What worked well / less well and why? How did you monitor compliance?

45. What actions are taken if a provider does not appear to comply with the requirements of the trial?

Lessons learned

46. What lessons have you learned from working on the Family Numeracy trial that could inform future trials?

47. How do you think we could we encourage schools and providers to participate in more trials like this in the future? What measures could be taken?

48. What best practices would you recommend for future trials based on your experiences?

49. What would you do differently if you were to conduct a similar trial in the future?

Anything else to add?

Thank and close

Survey questions

Family Numeracy Baseline all variables and values

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) [OPEN]
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

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 [EXCLUSIVE]

3 Prefer not to say [EXCLUSIVE]

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 – And how confident do you feel about doing the following things in everyday life? Repeated for statements a to f

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

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 / take part in this Family Numeracy programme?

1. = 1-3: To help you to get a job you want

2. = 1-3: 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. = 1-3: To improve your skills or knowledge

6. = 1-3: For personal enjoyment / interest

7. = 1-3: Because you were encouraged to by a family member / friend

8. = 1-3: Because you were encouraged to by an employer

9. = 1-3: Because you were encouraged by a Jobcentre Plus work coach

10. = 1-3: Because you were told you had to by a Jobcentre Plus work coach or you would lose some of your benefits

11. = 1-3: Because it was free

12. = 1-3: To help children with maths homework

13. = 4: To be able to support your child's education

14. = 4: To improve your parenting skills

15. = 4: To improve your skills and knowledge about maths

16. = 4: To improve your skills for your current job (IF WORKING BEFORE THE COURSE QPREWORK =1-6)

17. = 4: To improve your employability

18. Another reason (please type in) [OPEN]

19. Don't know [EXCLUSIVE]

QREASCOURSEMAIN What is the MAIN reason you want to TRIALDUM = 1-3 do this course? /: take part in this Family Numeracy programme?

1. = 1-3: To help you to get a job you want

2. = 1-3: 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. = 1-3: To improve your skills or knowledge

6. = 1-3: For personal enjoyment / interest

7. = 1-3: Because you were encouraged to by a family member / friend

8. = 1-3: Because you were encouraged to by an employer

9. = 1-3: Because you were encouraged by a Jobcentre Plus work coach

10. = 1-3: Because you were told you had to by a Jobcentre Plus work coach or you would lose some of your benefits

11. = 1-3: Because it was free

12. = 1-3: To help children with maths homework

13. = 4: To be able to support your child's education

14. = 4: To improve your parenting skills

15. = 4: To improve your skills and knowledge about maths

16. = 4: To improve your skills for your current job

17. = 4: To improve your employability

18. [DISPLAY TEXT OF REASON SPECIFIED AT QREASCOURSE = 18]

19. Don't know

QPENG1 how often did you discuss with your child what they were learning at school?

1. Daily

2. Weekly

3. Monthly

4. Rarely

5. Never

6. Not relevant to me

QPENG2 And how often did you check your child's progress at school through the school's portal or other means, such as talking to the teacher or teaching assistant?

1. Daily
2. Weekly
3. Monthly
4. Rarely
5. Never
6. Not relevant to me

QPENG3. How confident were you in helping your child with their homework or school assignments?

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

QPENG4. How often did you attend parent-teacher meetings?

1. Always
2. Often
3. Sometimes
4. Rarely
5. Never
6. Not relevant to me

QPENG5. What, if anything, prevented you from being more involved in your child's education?

1. Lack of time
2. Work commitments

3. Childcare issues

4. Language barriers

5. Not knowing how to get involved

6. Not feeling confident

7. Another reason (please type in) [OPEN]

8. Not relevant to me, I was as involved as I wanted to be in my child's education [FIXED, EXCLUSIVE]

QPENG6. Still thinking back to the last academic year, that is September 2023 to July 2024, how often did you engage with your child's maths learning, for example, helping with maths homework, helping your child improve their maths, etc.?

1. Daily

2. Weekly

3. Monthly

4. Rarely

5. Never

6. Not relevant to me

QPENG7. And what, if anything, prevented you from being more involved with your child's maths learning?

1. Lack of time

2. Work commitments

3. Childcare issues

4. I didn't know how to get involved

5. I am not confident when it comes to maths

6. I didn't know about the maths my child was learning at school

7. Another reason (please type in) [OPEN]

8. Not relevant to me, I was as involved as I wanted to be in my child's maths learning [FIXED, EXCLUSIVE]

QAGE What is your age?

1. Please write in [OPEN TEXT BOX - NUMERIC ONLY]

2. 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 – please write in [OPEN TEXT BOX]

5. Prefer not to say

QETHNCITY Which one of these ethnic groups would you describe yourself as belonging to?

White [Expandable Header]

1. English / Welsh / Scottish / Northern Irish / British

2. Irish

3. Gypsy or Irish Traveller

4. Any other White background

Mixed / multiple ethnic groups [Expandable Header]

5. White and Black Caribbean

6. White and Black African

7. White and Asian

8. Any other Mixed / multiple ethnic background

Asian / Asian British [Expandable Header]

9. Indian

10. Pakistani

11. Bangladeshi

12. Chinese

13. Any other Asian background

Black / African / Caribbean / Black British [Expandable Header]

14. African

15. Caribbean

16. Any other Black / African / Caribbean background

Other ethnic group [Expandable Header]

17. Arab

18. Any other ethnic group, please write in [OPEN]

19. Prefer not to answer

20. Consent not granted [HIDDEN FOR THE RESPONDENT]

QQUALANY Do you have any formal qualifications? This could include qualifications from school like GCSEs or A levels or from college or university such as BTECs or NVQs.

1. Yes

2. No

3. Don’t know

QQUALGCSE Have you achieved a GCSE or equivalent, for example Basic Skills course, O levels, CSEs or a Functional Skills Qualification at Level 2 in any subject?

1. Yes

2. No

3. Don't know

QQUALGCSEMATHS Were any of your GCSE or equivalent qualifications, for example Basic Skills course, O levels, CSEs or Functional Skills Qualifications at Level 2 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 (for example, BTEC National, OND or ONC, City and Guilds Advanced Craft)

2. NVQ level 2 or equivalent (for example BTEC General, City and Guilds Craft)

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

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

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 [EXCLUSIVE]

4. Don't know [EXCLUSIVE]

5. Prefer not to say [EXCLUSIVE]

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

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

Family Numeracy Endline all variables and values

Family Numeracy

QCOMPLETE Did you complete the programme, that is the classroom-based lessons and the homework?

1. Yes – completed all the classroom-based lessons plus all the homework

2. Yes – completed all the classroom-based lessons and some of the homework

3. Yes – completed all the classroom-based lessons but none of the homework

4. No – left the programme part way through

5. No – the programme is still in progress

6. Don’t know

7. Prefer not to say

QINCOMPLETEALL Why didn’t you stay to the end of the programme?

1. Concerns about the cost of attending

2. Didn’t like what you were doing

3. Did not like the way the programme was delivered

4. Didn’t like the other people on the programme

5. Not enough time or conflicted with other commitments

6. Lack of support from family to attend

7. Lack of support from employer to attend

8. Your child did not want to attend the programme

9. Personal / family problems / ill health

10. Did not like the programme leader

11. Another reason

12. Don’t know

QCURRENTWORK Which of the following best describes the main thing you are currently doing now?

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

15. Prefer not to say

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

QFKS1MWORK To what extent do you use maths at work?

1. Daily

2. 1-4 times a week

3. Occasionally (a few times a month)

4. Rarely (less than once a month)

5. Never

6. Don’t know

QPREM What was your experience of learning maths prior to signing up to the Family Numeracy programme?

1. Learnt maths up to age 16

2. Learnt maths up to age 19

3. Learnt maths beyond age 19

4. Don’t know

QKST1M To what extent do you understand the maths your child is studying in Key Stage 1?

1. Very well

2. Fairly well

3. Not very well

4. Not at all

5. Don’t know

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?

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

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

QNUMBHELP To what extent, if at all, do you think this programme has helped to improve your confidence when doing the following things in everyday life?

1. Helped a lot

2. Helped a little

3. Made no difference

4. Made it a little worse

5. Made it a lot worse

6. Not relevant to me

7. Don’t know

a) Checking your change is right when you have bought something

b) Working out the best deals when shopping

c) Helping children with 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

QBEN What impact, if any, do you think the programme has had on your …

1. Very positive

2. Fairly positive

3. No impact

4. Fairly negative

5. Very negative

6. Don’t know

a) Mental health and wellbeing

b) Sense of being part of your local community

c) Chances of finding paid work in the future

d) Chances of earning a higher wage in future

e) Chances of finding a job you find more fulfilling

f) Chances of progressing / being promoted in your current job

QNOBEN Why do you think the programme hasn’t helped with any of these things?

1. Your maths / numeracy was already good enough

2. It’s too soon after the programme to say

3. Quality of teaching / materials available wasn’t good enough

4. What you learned was not helpful or relevant to your life

5. It was too easy / you didn’t learn anything new

6. It was too hard

7. You need a more advanced course / further training to see any benefits

8. Your child did not enjoy the session

9. You did not need the maths to support your child's learning

10. Another reason

11. Don't know

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

1. Strongly agree

2. Tend to agree

3. Neither agree nor disagree

4. Tend to disagree

5. Strongly disagree

6. Don't know

a) The programme increased your willingness to attempt maths problems

b) The programme increased your confidence at maths

c) The programme increased your understanding of Key Stage 1 maths

d) The programme increased your ability to help your child in maths

e) The programme led you to engage more often with your child's school

f) Your attitude to maths is more positive following the course

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

1. Strongly agree

2. Tend to agree

3. Neither agree nor disagree

4. Tend to disagree

5. Strongly disagree

6. Don’t know

a) The programme increased your child’s willingness to attempt maths problems

b) The programme increased your child’s confidence in maths

c) The programme increased your child’s ability in maths

d) Your child’s attitude to maths is more positive following the programme

QINTROFN How often do you discuss with your child what they are learning at school?

1. Daily

2. Weekly

3. Monthly

4. Rarely

5. Never

6. Not relevant to me

QPENG2 How often do you check your child's progress at school through the school’s portal or other means, such as talking to the teacher or teaching assistant?

1. Daily

2. Weekly

3. Monthly

4. Rarely

5. Never

6. Not relevant to me

QPENG3 How confident are you in helping your child with their homework or school assignments?

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

QPENG4 How often do you attend parent-teacher meetings?

1. Always

2. Often

3. Sometimes

4. Rarely

5. Never

6. Not relevant to me

QPENG5 What, if anything, prevents you from being more involved in your child's education?

1. Lack of time

2. Work commitments

3. Childcare issues

4. Language barriers

5. Not knowing how to get involved

6. Not feeling confident

7. Another reason

8. Not relevant to you.

QPENG6 How often do you engage with your child's maths learning, for example, helping with maths homework, helping your child improve their maths, etc.?

1. Daily

2. Weekly

3. Monthly

4. Rarely

5. Never

6. Not relevant to me

QPENG7 And what, if anything, prevents you from being more involved with your child's maths learning?

1. Lack of time

2. Work commitments

3. Childcare issues

4. You don't know how to get involved

5. You are not confident when it comes to maths

6. You don't know about the maths your child is learning at school

7. Another reason

8. Not relevant to me, I am as involved as I want to be in my child's maths learning

QSCHKST1 What, if any, types of support does your school offer to help you understand your children's Key Stage 1 maths curriculum or curriculum in general?

1. Information sessions

2. Workshops

3. Open classroom visits to observe lessons

4. Online platforms to share resources

5. Something else

6. Don’t know

QSCHKST1ENG How often do you engage with this support?

1. Daily

2. Weekly

3. Monthly

4. Rarely

5. Never

6. Not relevant to me

QTRAINFO Were you given any information about other courses you could do after the Family Numeracy programme?

1. Yes

2. No

3. Don’t know

QTRAIN1 Are you planning to do any courses or training since you signed up to the Family Numeracy programme?

1. Yes – you have started more study or training

2. Yes – you are going to start more study or training

3. No

4. Don’t know

5. Prefer not to say

QTRAIN2 What sort of course or training will you be doing? Please only refer to courses or training started since signing up to the Family Numeracy programme.

1. An apprenticeship

2. Course or training at work, or from your employer

3. Course or training just related to your interests, hobbies or for personal development

4. Other course or training at a further education (FE) /adult education college or training provider

5. Other course or training at a higher education institution, e.g. university

6. Another type of course or training

7. Prefer not to say

QTRAIN3 What level of qualification will you have if you finish that course or training?

1. Entry level, e.g. entry level award, entry level ESOL, Skills for Life

2. Level 1, e.g. foundation GCSE, first certificate, level 1 Functional Skills Qualification (FSQ)

3. Level 2, e.g. GCSE, intermediate apprenticeship, level 2 Functional Skills Qualification (FSQ)

4. Level 3, e.g. A-Level, advanced apprenticeship, access to higher education diploma

5. Level 4 or higher e.g. a higher apprenticeship, a foundation degree, a degree, graduate certificate or diploma

6. Course or training does not lead to a qualification

7. Course or training does not have a level

8. Prefer not to say

9. Don’t know

QFUTURECOURSEA Have you signed up or are you planning to sign up for a maths course in the future?

1. Yes

2. No

3. Haven’t decided yet

QFUTURECOURSEB If yes, which course(s) have you enrolled in or plan to enrol in?

1. [OPEN]

2. Prefer not to say

QTRAIN4 To what extent, if any, did your experience of the programme influence your decision to do more learning in maths?

1. A lot

2. A little

3. Not at all

4. Don’t know

QSATALL Overall, how satisfied or dissatisfied were you with the programme?

1. Very satisfied

2. Fairly satisfied

3. Neither satisfied nor dissatisfied

4. Fairly dissatisfied

5. Very dissatisfied

6. Don’t know

QDISAT Why were you dissatisfied with the programme overall?

1. It was too difficult

2. It was too easy

3. Poor quality of teaching

4. Less contact time with tutors than expected

5. The classes were too long/took too much time

6. Difficult to travel to the sessions

7. Sessions were at an inconvenient time

8. Didn’t like the other people on the programme

9. Difficult to juggle with your other commitments

10. Did not like the tutor/teacher

11. Did not like the way the programme was delivered

12. It made your anxiety about maths worse

13. It made your child’s anxiety about maths worse

14. Your child did not enjoy it

15. Another reason

16. Don’t know

QSATOTH How satisfied or dissatisfied were you with each of the following?

1. Very satisfied

2. Fairly satisfied

3. Neither satisfied nor dissatisfied

4. Fairly dissatisfied

5. Very dissatisfied

6. Don’t know

a) The quality of the session delivery

b) The content of any learning materials, workbooks or reading materials in the sessions

c) The homework requirements

d) The weekly structure of the programme

e) The length of each session

f) The amount of time allocated to different activities within each session

g) The overall length of the programme

h) The timing of the sessions

i) The venue of the sessions

j) Communication about the sessions including objective of the sessions, and level of engagement expected

k) The information provided about other programmes to do

l) The difficulty of the maths covered

m) The overall experience

n) The amount of time your child spent with you doing the programme

QDISWHYTEACH You said you were dissatisfied with the quality of the session delivery. Why was this?

1. You did not like the style of delivery

2. Not enough interaction in the sessions

3. The tutor did not explain things clearly / give clear instructions

4. Not a good mix of theory and practical work

5. The tutor was late to sessions

6. The tutor was not able to control the class/prevent disruptions

7. Not enough time spent with the teacher

8. Another reason

9. Don’t know

QDISWHYCONT You said you were dissatisfied with the content of the learning materials. Why was this?

1. It was too easy

2. It was too difficult

3. It took too long to complete

4. Instructions were unclear

5. Problems with the technology

6. Another reason

7. Don’t know

QDISWHYHOMEWORK You said you were dissatisfied with the homework requirements. Why was this?

1. It was too easy

2. It was too difficult

3. The tasks took too long to complete

4. Instructions were unclear

5. Problems with the technology

6. You did not have time to complete tasks outside of the sessions

7. Another reason

8. Don’t know

QDISWHYINFO You said you were dissatisfied with the information provided about other programmes or courses to do after this one. Why was this?

1. Did not understand the information

2. Did not receive enough information

3. Information was too general

4. Information was too specific

5. Programmes / courses were not appropriate for you

6. Not interested in doing further courses

7. Another reason

8. Don’t know

QEASE Would you say that the maths covered on your course was?

1. Too easy

2. About right

3. Too difficult

4. Don’t know / can’t remember

QCHALLENGES Did you face any of the following challenges related to the programme?

1. Yes

2. No

3. Don’t know

a) It was difficult to take time out of your day to attend the programme

b) It was difficult to take time out of your day to complete activities with your child at home

c) It was difficult to understand what you needed to do for the activities with your child at home

d) You did not have the appropriate tools/resources to complete activities with your child at home

e) It was difficult to understand the maths covered by the course

QENGAGING Overall, how engaging did you find the programme?

1. Very engaging

2. Fairly engaging

3. Neutral

4. Not very engaging

5. Not engaging at all

6. Don’t know

QREC How likely are you to recommend a similar programme to people you know?

1. You have already recommended it

2. Very likely

3. Quite likely

4. Neither likely nor unlikely

5. Quite unlikely

6. Very unlikely

7. Don’t know

QCHANGE. Thinking about your whole experience of the programme, what would be one thing that you would change to improve it for others?

1. [OPEN]

2. Nothing

QSUGGESTIONS Do you have any suggestions about how to improve the programme?

1. [OPEN]

2. No suggestions

QTRIALAWARENESS Firstly, were you aware you were taking part in a research trial?

1. Yes, you were aware you were taking part in a trial

2. No, you weren’t aware you were 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?

1. Strongly agree

2. Tend to agree

3. Neither agree nor disagree

4. Tend to disagree

5. Strongly disagree

6. Don’t know

a) You were happy to take part in a research trial

b) The information you were provided about the research trial was easy to understand

c) You tried harder on the programme because it was part of a research trial

d) The surveys you completed asked questions that were relevant to you

e) You would recommend taking part in a research trial to other learners

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

QCOMMENTS Is there anything else you would like to feedback about your participation in this research which hasn't been covered so far?

1. [OPEN]

2. No further comments

Appendix 5: Code

```
**power calculations for pilot
**Assumptions
**ICC = 0.2
**Average cluster size = 10
**Attrition at cluster level = 30%

. display ((4*1*1*(2.8*2.8))*(1+(0.*8.5)))/(0.4*0.4*9.5*.7)
79.578947

//using anonymised data
use "$anondata\anon_labeled_familynumeracy_20251126.dta"

***cleaning variables**************************8
//deleting all _fsq_ variables
ds *fsq_*
drop `r(varlist)'

*duplictae ID check
//assigning 1 or duplicate ID
sort uniquelearnerid
by uniquelearnerid: gen repeat_flag = (_n > 1)

ta repeat_flag //15 duplicate cases

*check if any school with withdrawn status in sample
codebook flagwithdraw //0 flagwithdraw

//checks for trial and projectnames
codebook trialname projectname trialid  //all match to FN

//encoding variables and saving with `_en' post script
foreach v in trialname projectname {
        encode `v', gen(`v'_en)
        codebook `v'_en
}

/*
age_ies is generated with non-anonymised data using dob-- Note: code below for
age_ies will not run on anonymised data:

*generating age as of 1/09/2025 to check eligibility
*destring and format date of birth
destring dateofbirth, generate(dob_num)

gen dob_format = string(mod(dob_num,100), "%02.0f") + "/" + ///
                string(mod(int(dob_num/100),100), "%02.0f") + "/" + ///
                string(int(dob_num/10000), "%04.0f")
```

```
gen dob = date(dob_format, "DMY")
format dob %tdDD/NN/CCYY

* drop intermediate vars
drop dob_format dob_num

*estimate age to closest integer
gen age_date = date("01/09/2025", "DMY")
format age_date %tdDD/NN/CCYY

gen age_ies= round((age_date-dob)/365) //there were 237 record differences with IPSOS
age
//quick checks
summarize age_ies
summarize age //this is already egenrated as of 01/09/2025-- do see a min age
difference
*/

// inspecting & encoding level 2 maths
codebook level2mathqualified
encode level2mathqualified, gen(level2_math_qualified_n)
recode level2_math_qualified_n (3=1 "Yes") (2=2 "No") (1=3 "Dont know"),
into(level2_math_qualified) //chaging the order of values
label var level2_math_qualified "Level 2 maths qualification"

codebook level2_math_qualified

//inspecting & encoding level 2 maths confidence
codebook confidenceinlevel2math
encode confidenceinlevel2math, gen(confidenceinlevel2math_n)
codebook confidenceinlevel2math_n

*recoding
recode confidenceinlevel2math_n (7 = 1 "Not at all confident") (8 = 2 "Not very
Confident") (3/5 = 3 "Neither") (2  = 4 " Fairly Confident") (9 = 5 "Very Confident")  (1 = 6
"Dont know") (6= 7 "Not applicable"), gen( confidenceinlevel2math_en)

*recoding to 3 categories with missing
recode confidenceinlevel2math_n (2 9 = 1 "Confident") (7 8 = 2 "Not confident") (3/5 = 3
"Neither") (1 6 . = 4 "Missing"), gen(confidence)
ta confidence //153 missing

*check eligibility with age_ies (generated using dob on non-anonimised data)
gen eligibility_ies = 1
codebook age_ies
replace eligibility_ies = 0 if age_ies < 19 //parents younger than 19 are ineligible
replace eligibility_ies = 0 if age_ies >= 19 & (level2_math_qualified==1  &
confidence==1) //ineligible with Level2 maths (yes) and confidence in L2 maths (very
confident or fairly confident)
```

```
encode eligibility, gen(eligibility_en)
*check
ta eligibility_en eligibility //all match

*quick checks - baseline, endline & ILR variable trial & group checks
replace svy_bs_s_trialdum = "Family Numeracy" if svy_bs_s_trialdum == "family
numeracy"
ta svy_bs_s_trialdum svy_end_fn_s_trialdum //no mismatch
ta trialname svy_end_fn_s_trialdum //no mismatch

ta svy_bs_s_groupdum svy_end_fn_s_groupdum, miss //svy_bs_s_groupdum missing
ta svy_end_fn_s_groupdum group  // no mismatches

*inspecting variables to geenrate survey response rate separately for baseline and
endline and those who responded in both
codebook svy_bs_s_timedum svy_end_fn_s_timedum //label if it is baseline or endline
survey
encode svy_bs_s_timedum, gen(svy_bs_s_timedum_en)
encode svy_end_fn_s_timedum, gen(svy_end_fn_s_timedum_en)

codebook svy_bs_modetype svy_end_fn_modetype
encode svy_bs_modetype, gen(svy_bs_modetype_en)
encode svy_end_fn_modetype, gen(svy_end_fn_modetype_en)

*cleaning group assignment
codebook group
encode group, gen(group_en)

*genrating biary variable treat
recode group_en (1=0 "control") (2=1 "treated"), into(treat)
codebook treat

//final indicators for response rate
ta svy_bs_s_timedum_en treat //141
ta svy_end_fn_s_timedum_en treat //353

//isnpecting and cleaning variables
*confirmation of participation in the program:
codebook svy_bs_qmultipfn svy_end_fn_qmultip
replace svy_bs_qmultipfn = "" if svy_bs_qmultipfn == "216"

encode svy_end_fn_qmultip, g(svy_end_fn_qmultip_en)
encode svy_bs_qmultipfn , g(svy_bs_qmultipfn_en)

codebook svy_bs_qmultipfn_en svy_end_fn_qmultip_en

*previous course participation
codebook svy_bs_qprevcourse
encode svy_bs_qprevcourse, g(svy_bs_qprevcourse_n)
codebook svy_bs_qprevcourse_n
```

```
recode svy_bs_qprevcourse_n ( 3=1 "Yes - completed it") (4=2 "Yes - enrolled in a
course, but did not complete it") (2=3 "No") (1=4 "Dont know"),
into(svy_bs_qprevcourse_en)

//demography-- inspecting a few demography indicators from survey
*employment status checks
codebook svy_bs_qpreworkever
encode svy_bs_qpreworkever, gen(svy_bs_qpreworkever_n)

recode svy_bs_qpreworkever_n (3=1 "Yes, in the last 12 months")(2=2 "Yes, but not in
the last 12 months")(1=3 "No, have never worked"), into(svy_bs_qpreworkever_en)
codebook svy_bs_qpreworkever_en

ta svy_bs_qpreworkever_en treat

*number of children
codebook svy_bs_qparent svy_end_fn_qparent
encode svy_bs_qparent, g(svy_bs_qparent_en) //treating this as categorical for ssurvey
descptives
encode svy_end_fn_qparent, g(svy_end_fn_qparent_en) //treating this as categorical for
ssurvey descptives

*sex & gender
codebook ilr_sex //sex no captured in survey
foreach v in ilr_sex svy_bs_qgender svy_end_fn_qgender {
        encode `v', gen(`v'_en)
        codebook `v'_en
}

codebook ilr_sex_en
recode ilr_sex_en (1=0 "Female")(2=1 "Male"), into(ilr_sex_new)
drop ilr_sex_en
ren ilr_sex_new ilr_sex_en
label var ilr_sex_en "ILR- sex" //0 F, 1 M

*--ethnicity--
codebook svy_bs_qethnicity svy_end_fn_qethnicity ilr_ethnicity
svy_bs_qethnicityqethnicity_oth // all string except ILR ethnicity

*converting ilr_ethnicity to string from numeric to merge with survey
tostring ilr_ethnicity, gen(ilr_ethnicity_str)
ta ilr_ethnicity_str

*Replace numeric codes in ILR ethnicity variable (31–99) with text values
replace ilr_ethnicity_str = "English/Welsh/Scottish/Northern Irish/British" if ilr_ethnicity_str
== "31"
replace ilr_ethnicity_str = "Irish" if ilr_ethnicity_str == "32"
replace ilr_ethnicity_str = "Gypsy or Irish Traveller" if ilr_ethnicity_str == "33"
replace ilr_ethnicity_str = "Any Other White background" if ilr_ethnicity_str == "34"
```

```
replace ilr_ethnicity_str = "White and Black Caribbean" if ilr_ethnicity_str == "35"
replace ilr_ethnicity_str = "White and Black African" if ilr_ethnicity_str == "36"
replace ilr_ethnicity_str = "White and Asian" if ilr_ethnicity_str == "37"
replace ilr_ethnicity_str = "Any Other Mixed/multiple ethnic background" if ilr_ethnicity_str
== "38"
replace ilr_ethnicity_str = "Indian" if ilr_ethnicity_str == "39"
replace ilr_ethnicity_str = "Pakistani" if ilr_ethnicity_str == "40"
replace ilr_ethnicity_str = "Bangladeshi" if ilr_ethnicity_str == "41"
replace ilr_ethnicity_str = "Chinese" if ilr_ethnicity_str == "42"
replace ilr_ethnicity_str = "Any other Asian background" if ilr_ethnicity_str == "43"
replace ilr_ethnicity_str = "African" if ilr_ethnicity_str == "44"
replace ilr_ethnicity_str = "Caribbean" if ilr_ethnicity_str == "45"
replace ilr_ethnicity_str = "Any other Black/African/Caribbean background" if
ilr_ethnicity_str == "46"
replace ilr_ethnicity_str = "Arab" if ilr_ethnicity_str == "47"
replace ilr_ethnicity_str = "Any other ethnic group" if ilr_ethnicity_str == "98"
replace ilr_ethnicity_str = "Not provided" if ilr_ethnicity_str == "99"

* genertingmerged ethnicity with ILR and survey responses
gen merged_ethnicity_str = ilr_ethnicity_str
replace merged_ethnicity_str = svy_bs_qethnicity if ilr_ethnicity == . & svy_bs_qethnicity
!= "" & svy_end_fn_qethnicity == ""
br ilr_ethnicity_str merged_ethnicity_str svy_bs_qethnicity if ilr_ethnicity == . &
svy_bs_qethnicity != "" & svy_end_fn_qethnicity == "" //check
replace merged_ethnicity_str = svy_end_fn_qethnicity if ilr_ethnicity == . &
svy_end_fn_qethnicity != "" & svy_bs_qethnicity == ""
br ilr_ethnicity_str merged_ethnicity_str svy_end_fn_qethnicity if ilr_ethnicity == . &
svy_end_fn_qethnicity != "" & svy_bs_qethnicity == "" //check

*check
br ilr_ethnicity_str merged_ethnicity_str svy_bs_qethnicity svy_end_fn_qethnicity if
merged_ethnicity_str != "" //all missing replaced wherver possible
encode  merged_ethnicity_str, gen(merged_ethnicity_en)
codebook merged_ethnicity_en

*--encoding ILR ethnicity
encode ilr_ethnicity_str, g(ilr_ethnicity_en)
ta ilr_ethnicity_en
ta ilr_ethnicity_en, nolabel
replace ilr_ethnicity_en = . if ilr_ethnicity_en == 1 //1 is all missing

*--recoding merged_ethnicity
tab merged_ethnicity_en
ta merged_ethnicity_en, nolabel

*cleaning merged var and recoding
recode merged_ethnicity_en ///
(15 16 = 1 "English / Welsh / Scottish / Northern Irish / British") ///
(18 = 2 "Irish") ///
(4 8 = 3 "Any Other White background") ///
```

```
(2 = 4 "Black African") ///
(13 = 5 "Caribbean") ///
(6 7 = 6 "Any other Black / African / Caribbean background") ///
(17 = 7 "Indian") ///
(20 = 8 "Pakistani") ///
(12 = 9 "Bangladeshi") ///
(14 = 10 "Chinese") ///
(5 = 11 "Any other Asian background") ///
(22 = 12 "Mixed - White and Asian") ///
(23 = 13 "Mixed - White and Black Caribbean") ///
(3 = 14 "Any Other Mixed / multiple ethnic background") ///
(9 10 = 15 "Any other ethnic group") ///
(11 = 16 "Arab") ///
(21 = 17 "Prefer not to say") ///
(19 = 18 "Not provided")(1=.), ///
into(merged_ethnicity_new)

*check
codebook merged_ethnicity_en //1 is '.'
br merged_ethnicity_en merged_ethnicity_new if merged_ethnicity_en != 1 //check when
non-missing
br merged_ethnicity_en merged_ethnicity_new if merged_ethnicity_en == 1 // check
whren it is missing
drop merged_ethnicity_en
ren merged_ethnicity_new merged_ethnicity_en // _new is renamed as _en
label var merged_ethnicity_en "Merged ethnicity- ILR, baseline and endline"
*ethnicity - categorised
ta merged_ethnicity_en
ta merged_ethnicity_en, nolabel
*genrating categories - only iof we need to see broad categories- this does not give us
specifically for British people
*QUESTION- Do we code Caribbean as black or white?
recode merged_ethnicity_en (1/3 = 1 "White") ///
                    (7/11 = 2 "Asian or Asian British") ///
                    (4/6 = 3 "Black, Black British, Caribbean or African") ///
                    (12/14 = 4 "Mixed or multiple ethnic groups") ///
                    (15/16 = 5 "Other ethnic group") ///
                    (17 = 6 "Prefer not to say") ///
                                        (18 = 7 "Not ptovided"), ///
                    gen(merged_ethnicity_cat)

*check
br merged_ethnicity_en merged_ethnicity_cat if merged_ethnicity_en !=. //all match--
ren merged_ethnicity_cat ethnicity
ta ethnicity

*--health issues or disability--
*inspecting vars
codebook svy_bs_qhealth1 svy_end_fn_qhealth1
encode svy_bs_qhealth1, g(svy_bs_qhealth1_en)
```

```
encode svy_end_fn_qhealth1, g(svy_end_fn_qhealth1_en)
*check
codebook svy_bs_qhealth1_en svy_end_fn_qhealth1_en

*generating merged health variable using svy_bs_qhealth1_en (do you have any chronic health condition),
gen merged_qhealth1 = svy_bs_qhealth1 //1 prefer not to say in endline is yes in baseline
replace merged_qhealth1 = svy_end_fn_qhealth1 if svy_bs_qhealth1_en == . & svy_end_fn_qhealth1_en != . //risk: if health awareness changes from base to endline

encode merged_qhealth1, gen(merged_qhealth1_n)
codebook merged_qhealth1_n
recode merged_qhealth1_n (4=1 "Yes") (2=2 "No")(1=3 "Dont know")(3=4 "Prefer not to say"), into(merged_qhealth1_en)

label var merged_qhealth1_en "merged- Do you have any physical or mental health conditions or illnesses lasting or expected to last for 12 months or more?"
br svy_bs_qhealth1 svy_end_fn_qhealth1 merged_qhealth1  // check

ta merged_qhealth1_en

*svy_bs_qhealth2: (does this affect your daily tasks?)
codebook svy_bs_qhealth2 svy_end_fn_qhealth2
encode svy_bs_qhealth2, g(svy_bs_qhealth2_en)
encode svy_end_fn_qhealth2, g(svy_end_fn_qhealth2_en)
codebook svy_bs_qhealth2_en svy_end_fn_qhealth2_en

*generating merged variable using baseline and endline
gen merged_qhealth2 = svy_bs_qhealth2
replace merged_qhealth2 = svy_end_fn_qhealth2  if svy_bs_qhealth2_en == . & svy_end_fn_qhealth2_en != .

encode merged_qhealth2, gen(merged_qhealth2_n)
codebook merged_qhealth2_n
recode merged_qhealth2_n (3 = 1 "Yes a lot") (2 = 2 "Yes a little") (1 = 3 "No"), into(merged_qhealth2_en)
ta merged_qhealth2_en

*check
br svy_bs_qhealth2_en svy_end_fn_qhealth2_en merged_qhealth2_en //all match

label var merged_qhealth2_en "merged- Does your condition or illness reduce your ability to carry out day-to-day activities?"

*health variable from ILR: ilr_llddhealthprob: learning disabilities/health problems
codebook ilr_llddhealthprob
recode ilr_llddhealthprob (1=1 "Learner considers himself/herself having a learning difficulty and/or disability and/or health problem") ///
```

```
(2=2 "Learner does not consider himself/herself having a learning difficulty and/or
disability and/or health problem") ///
(9 = 3 "No information provided"), into(ilr_llddhealthprob_en)

label var ilr_llddhealthprob_en "Learner disabilities/health problems- ILR"
codebook ilr_llddhealthprob_en

*--Binary health problem variable-- merged with merged_qhealth1_en (Do you have any
physical or mental health conditions lasting more than 12 months)
*coded to one for those who report that they have a learning difficulty and/or disability
and/or health problem and zero for those who do not

gen illhealth=.
replace illhealth=1 if (ilr_llddhealthprob_en == 1 | merged_qhealth1_en == 1)
replace illhealth=0 if (ilr_llddhealthprob_en == 2 | merged_qhealth1_en == 2)
label define lblhealth 1 "Yes" 0 "No"
label values illhealth lblhealth
lab var illhealth "Learner reports health problem"
codebook illhealth

*english speaking: svy_bs_qeng1
codebook svy_bs_qeng1 svy_end_fn_qeng1
encode svy_bs_qeng1, g(svy_bs_qeng1_en)
encode svy_end_fn_qeng1, g(svy_end_fn_qeng1_en)
codebook svy_bs_qeng1_en svy_end_fn_qeng1_en

*generating merged variable
gen merged_qeng1 = svy_bs_qeng1
replace merged_qeng1 = svy_end_fn_qeng1 if svy_bs_qeng1_en == . &
svy_end_fn_qeng1_en != .
encode merged_qeng1, gen(merged_qeng1_n)
codebook merged_qeng1_n
recode merged_qeng1_n (2=1 "Yes")(1=0 "No"), into(merged_qeng1_en)
label var merged_qeng1_en "merged- Is English your first language"
ta merged_qeng1_en

*check
br merged_qeng1_en svy_end_fn_qeng1_en svy_bs_qeng1_en

*--survey variables on work status--
*svy_bs_qpreworkever_en- what were you doing before you astarted this course
codebook svy_bs_qprework
encode svy_bs_qprework, g(svy_bs_qprework_n)
ta svy_bs_qprework_n if svy_bs_qprework_n != .
ta svy_bs_qprework_n, nolabel
ta svy_bs_qpreworkqprework_oth
encode svy_bs_qpreworkqprework_oth, g(svy_bs_qpreworkqprework_oth_n)
ta svy_bs_qprework_n
```

```
recode svy_bs_qprework_n (1 2 3 6 7 8 9 = 0 "not working 4 weeks before baseline") (4
10 11 = 1 "working 4 weeks before baseline") (5=.), into(svy_bs_qprework_en) //5 coded
from other category var below
replace svy_bs_qprework_en = 1 if svy_bs_qpreworkqprework_oth_n == 2 &
svy_bs_qprework_en == . //others- workign sometimes
replace svy_bs_qprework_en = 0 if svy_bs_qpreworkqprework_oth_n == 1 &
svy_bs_qprework_en == . //others- carer
codebook svy_bs_qprework_en

*--ILR- employment status variables: ilr_empstat- learner employment status-- these are
non-missing only for ilr_empstat 1 to 4
codebook ilr_empstat1 ilr_empstat2 ilr_empstat3 ilr_empstat4 //10, 11, 12, 98
recode ilr_empstat1 (10 = 1 "In paid employment") (11 = 2 "Not in paid employment,
looking for work and available to start work") ///
(12= 3 "Not in paid employment, not looking for work and/or not available to start work")
///
(98 = 4 "Not known / not provided"), into(ilr_empstat1_en)
recode ilr_empstat2 (10 = 1 "In paid employment") (11 = 2 "Not in paid employment,
looking for work and available to start work") ///
(12= 3 "Not in paid employment, not looking for work and/or not available to start work")
///
(98 = 4 "Not known / not provided"), into(ilr_empstat2_en)
recode ilr_empstat3 (10 = 1 "In paid employment") ///
(98 = 4 "Not known / not provided"), into(ilr_empstat3_en)
recode ilr_empstat4 (10 = 1 "In paid employment")  ///
(12= 3 "Not in paid employment, not looking for work and/or not available to start work")
///
(98 = 4 "Not known / not provided"), into(ilr_empstat4_en)
label var ilr_empstat1_en "The learner's employment status"
label var ilr_empstat2_en "The learner's employment status"
label var ilr_empstat3_en "The learner's employment status"
label var ilr_empstat4_en "The learner's employment status"

*--Age--
codebook svy_bs_qage age  // age is empty where var 'age' is empty
sum age
sum age if treat == 0
sum age if treat == 1

*age cat -- using ILR variable 'age'
gen age_ies_cat = .
replace age_ies_cat= 1 if age >=16 & age <=24
replace age_ies_cat= 2 if age >= 25 & age <=34
replace age_ies_cat= 3 if age >= 35 & age <=49
replace age_ies_cat= 4 if age >= 50

recode age_ies_cat (1=1 "16-24")(2=2 "25-34")(3=3 "35-49")(4=4 "50+"), into(age_cat)
ta age_cat treat, miss

//Questions around participation
```

```
*reasosn to do the course: svy_bs_qreascourse is multiple response while
svy_bs_qreascoursemain is the following question on main reason
codebook svy_bs_qreascourse svy_bs_qreascoursemain
svy_bs_qreascourseqreascourse_o
label var svy_bs_qreascourse "Why did you want to do this course?"

encode svy_bs_qreascoursemain, g(svy_bs_qreascoursemain_en)
codebook svy_bs_qreascoursemain_en

encode svy_bs_qreascourseqreascourse_o, g(svy_bs_qreascourse_o_en)
codebook svy_bs_qreascourse_o_en if svy_bs_qreascoursemain_en == . //other all
blanks where main reason is blank hence no merging needed

*since svy_bs_qreascourse is multiple response - it is cleaned for subsequent qvars for
each MCQ response
*var svy_bs_qreascourse spplit by multiple response
codebook svy_bs_qreascourse01 svy_bs_qreascourse02 svy_bs_qreascourse03
svy_bs_qreascourse04 svy_bs_qreascourse05 svy_bs_qreascourse06
svy_bs_qreascourse07 svy_bs_qreascourse08 svy_bs_qreascourse09
svy_bs_qreascourse10 svy_bs_qreascourse11 svy_bs_qreascourse12
svy_bs_qreascourse13 svy_bs_qreascourse14 svy_bs_qreascourse15
svy_bs_qreascourse16 svy_bs_qreascourse17 svy_bs_qreascourse18
svy_bs_qreascourse19

*encoding each of these--svy_bs_qreascourse is split into 1 to 19 with Y/N responses
foreach v in svy_bs_qreascourse svy_bs_qreascourse01 svy_bs_qreascourse02
svy_bs_qreascourse03 ///
svy_bs_qreascourse04 svy_bs_qreascourse05 svy_bs_qreascourse06
svy_bs_qreascourse07 ///
svy_bs_qreascourse08 svy_bs_qreascourse09 svy_bs_qreascourse10
svy_bs_qreascourse11 ///
svy_bs_qreascourse12 svy_bs_qreascourse13 svy_bs_qreascourse14
svy_bs_qreascourse15 ///
svy_bs_qreascourse16 svy_bs_qreascourse17 svy_bs_qreascourse18
svy_bs_qreascourse19 ///
{
        encode `v', g(`v'_en)

}

foreach v in svy_bs_qreascourse svy_bs_qreascourse01 svy_bs_qreascourse02
svy_bs_qreascourse03 ///
svy_bs_qreascourse04 svy_bs_qreascourse05 svy_bs_qreascourse06
svy_bs_qreascourse07 ///
svy_bs_qreascourse08 svy_bs_qreascourse09 svy_bs_qreascourse10
svy_bs_qreascourse11 ///
svy_bs_qreascourse12 svy_bs_qreascourse13 svy_bs_qreascourse14
svy_bs_qreascourse15 ///
svy_bs_qreascourse16 svy_bs_qreascourse17 svy_bs_qreascourse18
svy_bs_qreascourse19 ///
```

```
{
codebook `v'_en
}

*tabouts
foreach v in svy_bs_qreascourse svy_bs_qreascourse01 svy_bs_qreascourse02
svy_bs_qreascourse03 ///
svy_bs_qreascourse04 svy_bs_qreascourse05 svy_bs_qreascourse06
svy_bs_qreascourse07 ///
svy_bs_qreascourse08 svy_bs_qreascourse09 svy_bs_qreascourse10
svy_bs_qreascourse11 ///
svy_bs_qreascourse12 svy_bs_qreascourse13 svy_bs_qreascourse14
svy_bs_qreascourse15 ///
svy_bs_qreascourse16 svy_bs_qreascourse17 svy_bs_qreascourse18
svy_bs_qreascourse19 svy_bs_qreascoursemain ///
{
        ta `v'_en treat
}

*survey completion indicator: svy_end_fn_qcomplete- did you complete the program
codebook svy_end_fn_qcomplete
encode svy_end_fn_qcomplete, g(svy_end_fn_qcomplete_n)
codebook svy_end_fn_qcomplete_n

recode svy_end_fn_qcomplete_n (7=1 "Yes completed all the classroom based lessons
plus all the hw") (5=2 "Yes completed all the classroom based lessons plus some
hw")(6=3 "Yes completed all the classroom based lessons but none of the hw")(3=4 "No
– the programme is still in progress")(2=5 "No – left the programme part way
through")(4=6 "Prefer not to say") (1=7 "Don't know"), into(svy_end_fn_qcomplete_en)

ta svy_end_fn_qcomplete_en treat

*indicator for not staying till the end of the course: svy_end_fn_qincompleteall (01 to 12) -
split by multiple options for svy_end_fn_qincompleteall with Y/N reponses
codebook svy_end_fn_qincompleteall svy_end_fn_qincompleteall01
svy_end_fn_qincompleteall02 ///
svy_end_fn_qincompleteall03 svy_end_fn_qincompleteall04
svy_end_fn_qincompleteall05 ///
svy_end_fn_qincompleteall06 svy_end_fn_qincompleteall07
svy_end_fn_qincompleteall08 ///
svy_end_fn_qincompleteall09 svy_end_fn_qincompleteall10
svy_end_fn_qincompleteall11 ///
svy_end_fn_qincompleteall12

*encoding
foreach v in svy_end_fn_qincompleteall svy_end_fn_qincompleteall01
svy_end_fn_qincompleteall02 ///
svy_end_fn_qincompleteall03 svy_end_fn_qincompleteall04
svy_end_fn_qincompleteall05 ///
```

```
svy_end_fn_qincompleteall06 svy_end_fn_qincompleteall07
svy_end_fn_qincompleteall08 ///
svy_end_fn_qincompleteall09 svy_end_fn_qincompleteall10
svy_end_fn_qincompleteall11 ///
svy_end_fn_qincompleteall12 {
        encode `v', g(`v'_en)

}

ta svy_end_fn_qincompleteall if svy_end_fn_s_timedum_en == 1
//svy_end_fn_qincompleteall is a nominal non-orders multiple response variable

foreach v in svy_end_fn_qincompleteall svy_end_fn_qincompleteall01
svy_end_fn_qincompleteall02 ///
svy_end_fn_qincompleteall03 svy_end_fn_qincompleteall04
svy_end_fn_qincompleteall05 ///
svy_end_fn_qincompleteall06 svy_end_fn_qincompleteall07
svy_end_fn_qincompleteall08 ///
svy_end_fn_qincompleteall09 svy_end_fn_qincompleteall10
svy_end_fn_qincompleteall11 ///
svy_end_fn_qincompleteall12 {

codebook `v'_en

}

*indicators from end_prep completions -- why did you not stay till the end of the course--
these are all empty
codebook svy_end_prep_qincompleteallqinc svy_end_prep_qincompleteall ///
svy_end_prep_qincompleteall01 svy_end_prep_qincompleteall02
svy_end_prep_qincompleteall03 ///
svy_end_prep_qincompleteall04 svy_end_prep_qincompleteall05
svy_end_prep_qincompleteall06 ///
svy_end_prep_qincompleteall07 svy_end_prep_qincompleteall08
svy_end_prep_qincompleteall09 ///
svy_end_prep_qincompleteall10 svy_end_prep_qincompleteall11
svy_end_prep_qincompleteall12 ///
svy_end_prep_qincompleteall13 svy_end_prep_qincompleteall14
svy_end_prep_qincompleteall15 //THESE ARE EMPTY

//Prog experience
*QBEN: Impact of the prog
codebook svy_end_fn_qben_aq2 svy_end_fn_qben_bq2 svy_end_fn_qben_cq2 ///
svy_end_fn_qben_dq2 svy_end_fn_qben_eq2 svy_end_fn_qben_fq2

foreach v in svy_end_fn_qben_aq2 svy_end_fn_qben_bq2 svy_end_fn_qben_cq2 ///
svy_end_fn_qben_dq2 svy_end_fn_qben_eq2 svy_end_fn_qben_fq2 {

        encode `v', g(`v'_en)
```

```
}

foreach v in svy_end_fn_qben_aq2 svy_end_fn_qben_bq2 svy_end_fn_qben_cq2 ///
svy_end_fn_qben_dq2 svy_end_fn_qben_eq2 svy_end_fn_qben_fq2 {

encode `v', g(`v'_n)

}

*recoding
codebook svy_end_fn_qben_fq2_n svy_end_fn_qben_eq2_n svy_end_fn_qben_dq2_n
foreach v in svy_end_fn_qben_fq2 svy_end_fn_qben_eq2 svy_end_fn_qben_dq2 {
recode `v'_n (3=1 "Very positive") (1=2 "Fairly positive") (2=3 "No impact"), into(`v'_en)
codebook `v'_en
}

codebook svy_end_fn_qben_aq2_n svy_end_fn_qben_bq2_n svy_end_fn_qben_cq2_n
recode svy_end_fn_qben_aq2_n (6=1 "Very positive") (2=2 "Fairly positive")(4=3 "No
impact")(2=4 "Fairly negative")(5=5 "Very negative") (1=6 "Dont know"),
into(svy_end_fn_qben_aq2_en)
recode svy_end_fn_qben_bq2_n (5=1 "Very positive") (2=2 "Fairly positive")(4=3 "No
impact")(4=4 "Very negative") (1=5 "Dont know"), into(svy_end_fn_qben_bq2_en)
recode svy_end_fn_qben_cq2_n (4=1 "Very positive") (2=2 "Fairly positive")(3=3 "No
impact")(1=4 "Dont know"), into(svy_end_fn_qben_cq2_en)

*QNOBEN: folllow up from QBEN- Why do you think the programme hasn't helped with
any of these things?
label var svy_end_fn_qnoben "Why do you think the programme hasn't helped with any
of these things?"
codebook svy_end_fn_qnoben svy_end_fn_qnoben01 svy_end_fn_qnoben02 ///
svy_end_fn_qnoben03 svy_end_fn_qnoben04 svy_end_fn_qnoben05
svy_end_fn_qnoben06 ///
svy_end_fn_qnoben07 svy_end_fn_qnoben08 svy_end_fn_qnoben09
svy_end_fn_qnoben10 svy_end_fn_qnoben11

foreach v in svy_end_fn_qnoben svy_end_fn_qnoben01 svy_end_fn_qnoben02 ///
svy_end_fn_qnoben03 svy_end_fn_qnoben04 svy_end_fn_qnoben05
svy_end_fn_qnoben06 ///
svy_end_fn_qnoben07 svy_end_fn_qnoben08 svy_end_fn_qnoben09
svy_end_fn_qnoben10 svy_end_fn_qnoben11 ///
{
        encode `v', g(`v'_en)
}

*tabulations
foreach v in svy_end_fn_qnoben svy_end_fn_qnoben01 svy_end_fn_qnoben02 ///
svy_end_fn_qnoben03 svy_end_fn_qnoben04 svy_end_fn_qnoben05
svy_end_fn_qnoben06 ///
svy_end_fn_qnoben07 svy_end_fn_qnoben08 svy_end_fn_qnoben09
svy_end_fn_qnoben10 svy_end_fn_qnoben11 ///
```

```
{

        ta `v'_en
}

//Existing support from school
label var svy_end_fn_qschkst1 "What support school offers to help understand children's
key stage 1 maths curriculum or curriculum in general?"
codebook svy_end_fn_qschkst1 svy_end_fn_qschkst11 svy_end_fn_qschkst12
svy_end_fn_qschkst13 svy_end_fn_qschkst14 svy_end_fn_qschkst15
svy_end_fn_qschkst16

foreach v in svy_end_fn_qschkst1 svy_end_fn_qschkst11 ///
svy_end_fn_qschkst12 svy_end_fn_qschkst13 svy_end_fn_qschkst14 ///
svy_end_fn_qschkst15 svy_end_fn_qschkst16 {

        encode `v', g(`v'_en)
}

*tabulations
foreach v in svy_end_fn_qschkst1 svy_end_fn_qschkst11 ///
svy_end_fn_qschkst12 svy_end_fn_qschkst13 svy_end_fn_qschkst14 ///
svy_end_fn_qschkst15 svy_end_fn_qschkst16 {

        ta `v'_en treat
}

//follow up: freq of engaging with this support?
codebook svy_end_fn_qschkst1eng
encode svy_end_fn_qschkst1eng, g(svy_end_fn_qschkst1eng_n)
ta svy_end_fn_qschkst1eng_n treat
recode svy_end_fn_qschkst1eng_n (1=1 "Daily")(6=2 "Weekly") (2=3 "Monthly") (5=4
"Rarely") (3=5 "Never")(4=6 "Not relevant to me"), into(svy_end_fn_qschkst1eng_en)

*tabulation
ta svy_end_fn_qschkst1eng_en treat

//indicators on understanding and use of maths, captured post FN
*use of maths at work: svy_end_fn_qfks1mwork_en
codebook svy_end_fn_qfks1mwork
encode svy_end_fn_qfks1mwork, g(svy_end_fn_qfks1mwork_n)
codebook svy_end_fn_qfks1mwork_n
recode svy_end_fn_qfks1mwork_n (2=1 "Daily")(1=2 "1-4 times a week") (5=3
"Occasionally (a few times a month") (6=4 "Rarely (less than once a month)") (4=5
"Never")(3=6 "Dont know"), into(svy_end_fn_qfks1mwork_en)

*tabulation
ta svy_end_fn_qfks1mwork_en treat
```

```
//QKST1M To what extent do you understand maths concepts used in the Key Stage 1 curriculum, such as number, shape, space and measure and statistics?
codebook svy_end_fn_qkst1m
encode svy_end_fn_qkst1m, g(svy_end_fn_qkst1m_n)
codebook svy_end_fn_qkst1m_n
recode svy_end_fn_qkst1m_n (4=1 "very well")(1=2 "fairly well")(3=3 "not very well")(2=4 "not at all"), into(svy_end_fn_qkst1m_en)
ta svy_end_fn_qkst1m_en treat

//Pre and post FN- parent's confidence in maths (var name: svy_end_bs_qconf_en svy_end_fn_qconf_en)
codebook svy_bs_qconf svy_end_fn_qconf svy_end_prep_qconf //svy_end_prep_qconfis empty
encode svy_bs_qconf, g(svy_bs_qconf_en)
encode svy_end_fn_qconf, g(svy_end_fn_qconf_en)
ta svy_bs_qconf_en treat
ta svy_end_fn_qconf_en treat

*--generating conf with numbers for regression--
*baseline
gen overall_conf_bs_cat = 1 if svy_bs_qconf_en == 3
replace overall_conf_bs_cat = 2 if svy_bs_qconf_en == 4
replace overall_conf_bs_cat = 3 if svy_bs_qconf_en == 2
replace overall_conf_bs_cat = 4 if svy_bs_qconf_en == 1
replace overall_conf_bs_cat = 5 if svy_bs_qconf_en == 5
la define conf_cat_label 1 "not at all confident" 2 "not very confident" 3 "neither confident nor not confident" 4 "fairly confident" 5 "very confident", replace
la values overall_conf_bs_cat conf_cat_label
ta overall_conf_bs_cat

*endline
gen overall_conf_end_cat = 1 if svy_end_fn_qconf_en == 3
replace overall_conf_end_cat = 2 if svy_end_fn_qconf_en == 5
replace overall_conf_end_cat = 3 if svy_end_fn_qconf_en == 2
replace overall_conf_end_cat = 4 if svy_end_fn_qconf_en == 1
replace overall_conf_end_cat = 5 if svy_end_fn_qconf_en == 6
la values overall_conf_end_cat conf_cat_label
ta overall_conf_end_cat
la var overall_conf_end "Overall confidence endline: binary"
la var overall_conf_bs "Overall confidence baseline: binary"

la var overall_conf_end_cat "Overall confidence endline: categorical"

la var overall_conf_bs_cat "Overall confidence baseline: categorical"


*parenal engagement with children/maths (baseline)
*qpeng5 and qpeng7 are missing description in the file shared-looked at the survey for this
```

```
foreach v in svy_bs_qpeng1 svy_bs_qpeng2 svy_bs_qpeng3 ///
svy_bs_qpeng4 svy_bs_qpeng5 svy_bs_qpeng5qpeng5_oth ///
svy_bs_qpeng6 svy_bs_qpeng7 svy_bs_qpeng7qpeng7_oth ///
{
        encode `v', g(`v'_n)

}

foreach v in svy_bs_qpeng1 svy_bs_qpeng2 svy_bs_qpeng3 ///
svy_bs_qpeng4 svy_bs_qpeng6 ///
{
codebook `v'_n if `v'_n !=.
}

*recode: qpeng1
recode svy_bs_qpeng1_n (1=1 "daily") (5=2 "weekly")(2=3 "monthly")(4=4 "rarely") (3= 5
"Not relevant to me"), into(svy_bs_qpeng1_en)
label var svy_bs_qpeng1_en "How often do you discuss with your child what they are
learning at school?"
codebook svy_bs_qpeng1_en

*recode: qpeng2
recode svy_bs_qpeng2_n (1=1 "daily") (6=2 "weekly")(2=3 "monthly")(5=4 "rarely") (3=5
"never")(4= 6 "Not relevant to me"), into(svy_bs_qpeng2_en)
label var svy_bs_qpeng2_en "And how often do you check your child's progress at
school through the school"
codebook svy_bs_qpeng2_en

*recode: qpeng3
recode svy_bs_qpeng3_n (6=1 "very confident") (1 = 2 "fairly confident") (2 = 3 "neither
confident nor not confident") ///
 ( 5=4  "not very confident") (3=5 "not at all confident") (4 = 6 "Not relevant to me"),
into(svy_bs_qpeng3_en)
label var svy_bs_qpeng3_en " How confident are you in helping your child with their
homework or school assignment"
codebook svy_bs_qpeng3_en

*recode: qpeng4
recode svy_bs_qpeng4_n (1=1 "always") (2=2 "often") (4=3 "sometimes") (3=4 "rarely"),
into(svy_bs_qpeng4_en)
label var svy_bs_qpeng4_en "How often do you attend parent-teacher meetings?"
codebook svy_bs_qpeng4_en

*qpeng51 to 58- have Y/N to multiple options in QPENG5-- same for qpeng71 to 78
(qpeng7)
codebook svy_bs_qpeng5 svy_bs_qpeng51 svy_bs_qpeng52 svy_bs_qpeng53
svy_bs_qpeng54 svy_bs_qpeng55 svy_bs_qpeng56 svy_bs_qpeng57 svy_bs_qpeng58

foreach v in svy_bs_qpeng5 svy_bs_qpeng51 svy_bs_qpeng52 svy_bs_qpeng53 ///
```

```
svy_bs_qpeng54 svy_bs_qpeng55 svy_bs_qpeng56 svy_bs_qpeng57 svy_bs_qpeng58
///
{
	encode `v', g(`v'_en)
}

foreach v in svy_bs_qpeng5 svy_bs_qpeng51 svy_bs_qpeng52 svy_bs_qpeng53 ///
svy_bs_qpeng54 svy_bs_qpeng55 svy_bs_qpeng56 svy_bs_qpeng57 svy_bs_qpeng58
///
{
	codebook `v'_en  //1 No, 2 Yes
}

*recode: qpeng 6
recode svy_bs_qpeng6_n (1=1 "daily") (6=2 "weekly")(2=3 "monthly")(5=4 "rarely") (3=5
"never")(4= 6 "Not relevant to me"), into(svy_bs_qpeng6_en)
label var svy_bs_qpeng6_en "How often do you engage with your child's <b>maths</b>
learning"
codebook svy_bs_qpeng6_en

*Qpeng7- this is split in qpeng71 to qpeng78 with Yes/No responses
codebook svy_bs_qpeng7 svy_bs_qpeng71 svy_bs_qpeng72 svy_bs_qpeng73
svy_bs_qpeng74 svy_bs_qpeng75 svy_bs_qpeng76 svy_bs_qpeng77 svy_bs_qpeng78

foreach v in svy_bs_qpeng7 svy_bs_qpeng71 svy_bs_qpeng72 svy_bs_qpeng73 ///
svy_bs_qpeng74 svy_bs_qpeng75 svy_bs_qpeng76 svy_bs_qpeng77 svy_bs_qpeng78
///
{
	encode `v', g(`v'_en)
}

foreach v in svy_bs_qpeng7 svy_bs_qpeng71 svy_bs_qpeng72 svy_bs_qpeng73 ///
svy_bs_qpeng74 svy_bs_qpeng75 svy_bs_qpeng76 svy_bs_qpeng77 svy_bs_qpeng78
///
{
	codebook `v'_en //1: No, 2: Yes
}

label var svy_bs_qpeng5_en "What, if anything, prevented you from being more involved
in your child's education?" //
label var svy_bs_qpeng7_en "And what, if anything, prevented you from being more
involved with your child's maths learning?"

//QPENG- parental engagement responses in endline
codebook svy_end_fn_qpeng1 svy_end_fn_qpeng2 svy_end_fn_qpeng3
svy_end_fn_qpeng4 svy_end_fn_qpeng6

foreach v in svy_end_fn_qpeng1 svy_end_fn_qpeng2 svy_end_fn_qpeng3
svy_end_fn_qpeng4 svy_end_fn_qpeng6 ///
{
```

```
	encode `v', g(`v'_n)
}

foreach v in svy_end_fn_qpeng1 svy_end_fn_qpeng2 svy_end_fn_qpeng3
svy_end_fn_qpeng4 svy_end_fn_qpeng6 ///
{
	codebook `v'_n
}

*recode: qpeng1
recode svy_end_fn_qpeng1_n (1=1 "daily") (4=2 "weekly")(2=3 "monthly")(3=4 "rarely"),
into(svy_end_fn_qpeng1_en)
labl var svy_end_fn_qpeng1_en "How often do you discuss with your child what they are
learning at school?"
codebook svy_end_fn_qpeng1_en

*recode: qpeng2
recode svy_end_fn_qpeng2_n (1=1 "daily") (6=2 "weekly")(2=3 "monthly")(5=4 "rarely")
(3=5 "never")(4= 6 "Not relevant to me"), into(svy_end_fn_qpeng2_en)
label var svy_end_fn_qpeng2_en "And how often do you check your child's progress at
school through the school"
codebook svy_end_fn_qpeng2_en

*recode: qpeng3
recode svy_end_fn_qpeng3_n (5=1 "very confident") (1 = 2 "fairly confident") (2 = 3
"neither confident nor not confident") ///
 ( 4=4  "not very confident") (3 = 5 "Not relevant to me"), into(svy_end_fn_qpeng3_en)
label var svy_end_fn_qpeng3_en " How confident are you in helping your child with their
homework or school assignment"
codebook svy_end_fn_qpeng3_en

*recode: qpeng4
recode svy_end_fn_qpeng4_n (1=1 "always") (4=2 "often") (6=3 "sometimes") (5=4
"rarely") (2=5 "never") (3= 6 "Not relevant to me"), into(svy_end_fn_qpeng4_en)
label var svy_end_fn_qpeng4_en "How often do you attend parent-teacher meetings?"
codebook svy_end_fn_qpeng4_en

*recode: qpeng6
recode svy_end_fn_qpeng6_n (1=1 "daily") (6=2 "weekly")(2=3 "monthly")(5=4 "rarely")
(3=5 "never")(4= 6 "Not relevant to me"), into(svy_end_fn_qpeng6_en)
label var svy_end_fn_qpeng6_en "How often do you engage with your child's
<b>maths</b> learning"
codebook svy_end_fn_qpeng6_en

*qpeng 5- endline (split into 51 to 58 with Yes/No responses)
codebook svy_end_fn_qpeng5 svy_end_fn_qpeng51 svy_end_fn_qpeng52
svy_end_fn_qpeng53 svy_end_fn_qpeng54 ///
svy_end_fn_qpeng55 svy_end_fn_qpeng56 svy_end_fn_qpeng57 svy_end_fn_qpeng58
label var svy_end_fn_qpeng5 "What, if anything, prevents you from being more involved
in your child's education?"
```

```
foreach v in svy_end_fn_qpeng5 svy_end_fn_qpeng51 svy_end_fn_qpeng52 ///
svy_end_fn_qpeng53 svy_end_fn_qpeng54 svy_end_fn_qpeng55 ///
svy_end_fn_qpeng56 svy_end_fn_qpeng57 svy_end_fn_qpeng58 ///
{
        encode `v', g(`v'_en)
        codebook `v'_en

}

label var svy_end_fn_qpeng5_en "What, if anything, prevents you from being more
involved in your child's education?"

*qpeng 7- split into 71 to 78 with Yes/No responses
codebook svy_end_fn_qpeng7 svy_end_fn_qpeng71 svy_end_fn_qpeng72 ///
svy_end_fn_qpeng73 svy_end_fn_qpeng74 svy_end_fn_qpeng75 svy_end_fn_qpeng76
///
svy_end_fn_qpeng77 svy_end_fn_qpeng78
label var svy_end_fn_qpeng7 "What, if anything, prevents you from being more involved
in your child's education?"
foreach v in svy_end_fn_qpeng7 svy_end_fn_qpeng71 svy_end_fn_qpeng72 ///
svy_end_fn_qpeng73 svy_end_fn_qpeng74 svy_end_fn_qpeng75 svy_end_fn_qpeng76
///
svy_end_fn_qpeng77 svy_end_fn_qpeng78 ///
{
        encode `v', g(`v'_en)
        codebook `v'_en
}

label var svy_end_fn_qpeng7_en "What, if anything, prevents you from being more
involved in your child's education?"

*below variables are open text
codebook svy_end_fn_qpeng5qpeng5_oth svy_end_fn_qpeng7qpeng7_oth

//Outcome variables

*Confidnce
codebook svy_bs_qnumconf_aq2 svy_bs_qnumconf_bq2 svy_bs_qnumconf_cq2
svy_bs_qnumconf_dq2 svy_bs_qnumconf_eq2 svy_bs_qnumconf_fq2
svy_end_fn_qnumconf_aq2 svy_end_fn_qnumconf_bq2 svy_end_fn_qnumconf_cq2
svy_end_fn_qnumconf_dq2 svy_end_fn_qnumconf_eq2 svy_end_fn_qnumconf_fq2
foreach v in svy_bs_qnumconf_aq2 svy_bs_qnumconf_bq2 svy_bs_qnumconf_cq2
svy_bs_qnumconf_dq2 svy_bs_qnumconf_eq2 svy_bs_qnumconf_fq2
svy_end_fn_qnumconf_aq2 svy_end_fn_qnumconf_bq2 svy_end_fn_qnumconf_cq2
svy_end_fn_qnumconf_dq2 svy_end_fn_qnumconf_eq2 svy_end_fn_qnumconf_fq2 {
   encode `v', g(`v'_n)
}

foreach v in svy_bs_qnumconf_aq2 svy_bs_qnumconf_bq2 svy_bs_qnumconf_cq2
svy_bs_qnumconf_dq2 svy_bs_qnumconf_eq2 svy_bs_qnumconf_fq2
```

```
svy_end_fn_qnumconf_aq2 svy_end_fn_qnumconf_bq2 svy_end_fn_qnumconf_cq2
svy_end_fn_qnumconf_dq2 svy_end_fn_qnumconf_eq2 svy_end_fn_qnumconf_fq2 {
        codebook `v'_n
}

//confidence for descriptivees
*recode to 5 values of confidence
*-----------------------------*
*   BASELINE CONFIDENCE (A–F)  *
*-----------------------------*

* A
recode svy_bs_qnumconf_aq2_n ///
    (6 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (5 = 2 "not very confident") ///
    (3 = 1 "not at all confident") ///
    (4 = 6 "Not relevant to me"), ///
    into(svy_bs_qnumconf_aq2_new)

* B
recode svy_bs_qnumconf_bq2_n ///
    (6 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (5 = 2 "not very confident") ///
    (3 = 1 "not at all confident") ///
    (4 = 6 "Not relevant to me"), ///
    into(svy_bs_qnumconf_bq2_new)

* C
recode svy_bs_qnumconf_cq2_n ///
    (5 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (4 = 2 "not very confident") ///
    (3 = 1 "not at all confident"), ///
    into(svy_bs_qnumconf_cq2_new)

* D
recode svy_bs_qnumconf_dq2_n ///
    (6 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (5 = 2 "not very confident") ///
    (3 = 1 "not at all confident") ///
    (4 = 6 "Not relevant to me"), ///
    into(svy_bs_qnumconf_dq2_new)
```

```
* E
recode svy_bs_qnumconf_eq2_n ///
    (6 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (5 = 2 "not very confident") ///
    (3 = 1 "not at all confident") ///
    (4 = 6 "Not relevant to me"), ///
    into(svy_bs_qnumconf_eq2_new)

* F  *** special: no 'not at all confident' ***
recode svy_bs_qnumconf_fq2_n ///
    (5 = 4 "very confident") ///
    (1 = 3 "fairly confident") ///
    (2 = 2 "neither confident nor not confident") ///
    (4 = 1 "not very confident") ///
    (3 = 5 "Not relevant to me"), ///
    into(svy_bs_qnumconf_fq2_new)

        label var svy_bs_qnumconf_aq2_new "Checking your change is right when you
have bought something"
        label var svy_bs_qnumconf_bq2_new "Working out the best deals when shopping"
        label var svy_bs_qnumconf_cq2_new "Helping children with maths homework or
talking about maths / numbers with children"
        label var svy_bs_qnumconf_dq2_new "Understanding interest rates on bank
statements"
        label var svy_bs_qnumconf_eq2_new "Keeping track of your bank account
balance"
        label var svy_bs_qnumconf_fq2_new "Working with numbers as part of a job"

codebook svy_bs_qnumconf_aq2_new svy_bs_qnumconf_bq2_new
svy_bs_qnumconf_cq2_new svy_bs_qnumconf_dq2_new svy_bs_qnumconf_eq2_new
svy_bs_qnumconf_fq2_new

//for descriptives
*------------------------------*
*   ENDLINE CONFIDENCE (A–F)   *
*------------------------------*

* A  *** special: no 'not at all confident' ***
recode svy_end_fn_qnumconf_aq2_n ///
    (5 = 4 "very confident") ///
    (1 = 3 "fairly confident") ///
    (2 = 2 "neither confident nor not confident") ///
    (4 = 1 "not very confident") ///
    (3 = 5 "Not relevant to me"), ///
    into(svy_end_fn_qnumconf_aq2_new)

* B
recode svy_end_fn_qnumconf_bq2_n ///
```

```
    (6 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (5 = 2 "not very confident") ///
    (3 = 1 "not at all confident") ///
    (4 = 6 " Not relevant to me"), ///
    into(svy_end_fn_qnumconf_bq2_new)

* C
recode svy_end_fn_qnumconf_cq2_n ///
    (5 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (4 = 2 "not very confident") ///
    (3 = 1 "not at all confident"), ///
    into(svy_end_fn_qnumconf_cq2_new)

* D
recode svy_end_fn_qnumconf_dq2_n ///
    (6 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (5 = 2 "not very confident") ///
    (3 = 1 "not at all confident") ///
    (4 = 6 "Not relevant to me"), ///
    into(svy_end_fn_qnumconf_dq2_new)

* E
recode svy_end_fn_qnumconf_eq2_n ///
    (6 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (5 = 2 "not very confident") ///
    (3 = 1 "not at all confident") ///
    (4 = 6 "Not relevant to me"), ///
    into(svy_end_fn_qnumconf_eq2_new)

* F  *** endline F DOES include all 5 confidence levels ***
recode svy_end_fn_qnumconf_fq2_n ///
    (5 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (4 = 2 "not very confident") ///
    (3 = 1 "not at all confident"), ///
    into(svy_end_fn_qnumconf_fq2_new)

        label var svy_end_fn_qnumconf_aq2_new "Checking your change is right when
you have bought something"
        label var svy_end_fn_qnumconf_bq2_new "Working out the best deals when
shopping"
```

```
        label var svy_end_fn_qnumconf_cq2_new "Helping children with maths homework
or talking about maths / numbers with children"
        label var svy_end_fn_qnumconf_dq2_new "Understanding interest rates on bank
statements"
        label var svy_end_fn_qnumconf_eq2_new "Keeping track of your bank account
balance"
        label var svy_end_fn_qnumconf_fq2_new "Working with numbers as part of a job"

 codebook svy_end_fn_qnumconf_aq2_new svy_end_fn_qnumconf_bq2_new
svy_end_fn_qnumconf_cq2_new svy_end_fn_qnumconf_dq2_new
svy_end_fn_qnumconf_eq2_new svy_end_fn_qnumconf_fq2_new

//confience variables for composite mean confidence score
*recode to 5 values of confidence
*-----------------------------*
*   BASELINE CONFIDENCE (A–F)  *
*-----------------------------*

* A
recode svy_bs_qnumconf_aq2_n ///
    (6 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (5 = 2 "not very confident") ///
    (3 = 1 "not at all confident") ///
    (4 = .), ///
    into(svy_bs_qnumconf_aq2_en)

* B
recode svy_bs_qnumconf_bq2_n ///
    (6 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (5 = 2 "not very confident") ///
    (3 = 1 "not at all confident") ///
    (4 = .), ///
    into(svy_bs_qnumconf_bq2_en)

* C
recode svy_bs_qnumconf_cq2_n ///
    (5 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (4 = 2 "not very confident") ///
    (3 = 1 "not at all confident"), ///
    into(svy_bs_qnumconf_cq2_en)

* D
recode svy_bs_qnumconf_dq2_n ///
    (6 = 5 "very confident") ///
```

```
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (5 = 2 "not very confident") ///
    (3 = 1 "not at all confident") ///
    (4 = .), ///
    into(svy_bs_qnumconf_dq2_en)

* E
recode svy_bs_qnumconf_eq2_n ///
    (6 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (5 = 2 "not very confident") ///
    (3 = 1 "not at all confident") ///
    (4 = .), ///
    into(svy_bs_qnumconf_eq2_en)

* F  *** special: no 'not at all confident' ***
recode svy_bs_qnumconf_fq2_n ///
    (5 = 4 "very confident") ///
    (1 = 3 "fairly confident") ///
    (2 = 2 "neither confident nor not confident") ///
    (4 = 1 "not very confident") ///
    (3 = .), ///
    into(svy_bs_qnumconf_fq2_en)

        label var svy_bs_qnumconf_aq2_en "Checking your change is right when you
have bought something"
        label var svy_bs_qnumconf_bq2_en "Working out the best deals when shopping"
        label var svy_bs_qnumconf_cq2_en "Helping children with maths homework or
talking about maths / numbers with children"
        label var svy_bs_qnumconf_dq2_en "Understanding interest rates on bank
statements"
        label var svy_bs_qnumconf_eq2_en "Keeping track of your bank account balance"
        label var svy_bs_qnumconf_fq2_en "Working with numbers as part of a job"

codebook svy_bs_qnumconf_aq2_en svy_bs_qnumconf_bq2_en
svy_bs_qnumconf_cq2_en svy_bs_qnumconf_dq2_en svy_bs_qnumconf_eq2_en
svy_bs_qnumconf_fq2_en

*------------------------------*
*   ENDLINE CONFIDENCE (A–F)   *
*------------------------------*

* A  *** special: no 'not at all confident' ***
recode svy_end_fn_qnumconf_aq2_n ///
    (5 = 4 "very confident") ///
    (1 = 3 "fairly confident") ///
    (2 = 2 "neither confident nor not confident") ///
    (4 = 1 "not very confident") ///
```

```
    (3 = .), ///
    into(svy_end_fn_qnumconf_aq2_en)

* B
recode svy_end_fn_qnumconf_bq2_n ///
    (6 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (5 = 2 "not very confident") ///
    (3 = 1 "not at all confident") ///
    (4 = .), ///
    into(svy_end_fn_qnumconf_bq2_en)

* C
recode svy_end_fn_qnumconf_cq2_n ///
    (5 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (4 = 2 "not very confident") ///
    (3 = 1 "not at all confident"), ///
    into(svy_end_fn_qnumconf_cq2_en)

* D
recode svy_end_fn_qnumconf_dq2_n ///
    (6 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (5 = 2 "not very confident") ///
    (3 = 1 "not at all confident") ///
    (4 = .), ///
    into(svy_end_fn_qnumconf_dq2_en)

* E
recode svy_end_fn_qnumconf_eq2_n ///
    (6 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (5 = 2 "not very confident") ///
    (3 = 1 "not at all confident") ///
    (4 = .), ///
    into(svy_end_fn_qnumconf_eq2_en)

* F  *** endline F DOES include all 5 confidence levels ***
recode svy_end_fn_qnumconf_fq2_n ///
    (5 = 5 "very confident") ///
    (1 = 4 "fairly confident") ///
    (2 = 3 "neither confident nor not confident") ///
    (4 = 2 "not very confident") ///
    (3 = 1 "not at all confident"), ///
    into(svy_end_fn_qnumconf_fq2_en)
```

```
	label var svy_end_fn_qnumconf_aq2_en "Checking your change is right when you have bought something"
	label var svy_end_fn_qnumconf_bq2_en "Working out the best deals when shopping"
	label var svy_end_fn_qnumconf_cq2_en "Helping children with maths homework or talking about maths / numbers with children"
	label var svy_end_fn_qnumconf_dq2_en "Understanding interest rates on bank statements"
	label var svy_end_fn_qnumconf_eq2_en "Keeping track of your bank account balance"
	label var svy_end_fn_qnumconf_fq2_en "Working with numbers as part of a job"

 codebook svy_end_fn_qnumconf_aq2_en svy_end_fn_qnumconf_bq2_en svy_end_fn_qnumconf_cq2_en svy_end_fn_qnumconf_dq2_en svy_end_fn_qnumconf_eq2_en svy_end_fn_qnumconf_fq2_en

*QPOUTCOMES To what extent do you agree or disagree with the following? (options)
label var svy_end_fn_qpoutcomes_aq2 "a) The programme increased your willingness to attempt maths problems"
label var svy_end_fn_qpoutcomes_bq2 "b) The programme increased your confidence at maths"
label var svy_end_fn_qpoutcomes_cq2 "c) The programme increased your understanding of Key Stage 1 maths"
label var svy_end_fn_qpoutcomes_dq2 "d) The programme increased your ability to help your child in maths"
label var svy_end_fn_qpoutcomes_fq2 "f) My attitude to maths is more positive following the course"
codebook svy_end_fn_qpoutcomes_aq2 svy_end_fn_qpoutcomes_bq2 svy_end_fn_qpoutcomes_cq2 svy_end_fn_qpoutcomes_dq2 svy_end_fn_qpoutcomes_eq2 svy_end_fn_qpoutcomes_fq2
foreach v in svy_end_fn_qpoutcomes_aq2 svy_end_fn_qpoutcomes_bq2 ///
svy_end_fn_qpoutcomes_cq2 svy_end_fn_qpoutcomes_dq2 ///
svy_end_fn_qpoutcomes_eq2 svy_end_fn_qpoutcomes_fq2 ///
{
	encode `v', g(`v'_n)

}

foreach v in svy_end_fn_qpoutcomes_aq2 svy_end_fn_qpoutcomes_bq2 ///
svy_end_fn_qpoutcomes_cq2 svy_end_fn_qpoutcomes_dq2 ///
svy_end_fn_qpoutcomes_eq2 svy_end_fn_qpoutcomes_fq2 ///
{
codebook `v'_n
}

*recoding in order
recode svy_end_fn_qpoutcomes_aq2_n (3=1 "Strongly agree") (5=2 "Tend to agree") (2=3 "Neither agree nor disagree") (6=4 "Tend to disagree") (4=5 " Strongly disagree") (1=6 "Dont know"), into (svy_end_fn_qpoutcomes_aq2_en)
```

```
*recode: bq2
recode svy_end_fn_qpoutcomes_bq2_n (2=1 "Strongly agree") (4=2 "Tend to agree")
(1=3 "Neither agree nor disagree") (5=4 "Tend to disagree") (3=5 " Strongly disagree"),
into (svy_end_fn_qpoutcomes_bq2_en)

*recode cq2
recode svy_end_fn_qpoutcomes_cq2_n (3=1 "Strongly agree") (5=2 "Tend to agree")
(2=3 "Neither agree nor disagree") (6=4 "Tend to disagree") (4=5 " Strongly disagree")
(1=6 "Dont know"), into (svy_end_fn_qpoutcomes_cq2_en)

*recode dq2
recode svy_end_fn_qpoutcomes_dq2_n (3=1 "Strongly agree") (4=2 "Tend to agree")
(2=3 "Neither agree nor disagree") (5=4 "Tend to disagree") (1=5 "Dont know"), into
(svy_end_fn_qpoutcomes_dq2_en)

*recode eq2
recode svy_end_fn_qpoutcomes_eq2_n (2=1 "Strongly agree") (4=2 "Tend to agree")
(1=3 "Neither agree nor disagree") (5=4 "Tend to disagree") (3=5 " Strongly disagree"),
into (svy_end_fn_qpoutcomes_eq2_en)

*recode fq2
recode svy_end_fn_qpoutcomes_fq2_n (2=1 "Strongly agree") (4=2 "Tend to agree")
(1=3 "Neither agree nor disagree") (5=4 "Tend to disagree") (3=5 " Strongly disagree"),
into (svy_end_fn_qpoutcomes_fq2_en)


*QCOUTCOMES To what extent do you agree or disagree with the following? (options)
*Child outcomes- responses by parents
codebook svy_end_fn_qcoutcomes_aq2 svy_end_fn_qcoutcomes_bq2
svy_end_fn_qcoutcomes_cq2 svy_end_fn_qcoutcomes_dq2
foreach v in svy_end_fn_qcoutcomes_aq2 svy_end_fn_qcoutcomes_bq2 ///
svy_end_fn_qcoutcomes_cq2 svy_end_fn_qcoutcomes_dq2 ///
{
        encode `v', g(`v'_n)

}

foreach v in svy_end_fn_qcoutcomes_aq2 svy_end_fn_qcoutcomes_bq2 ///
svy_end_fn_qcoutcomes_cq2 svy_end_fn_qcoutcomes_dq2 ///
{

        codebook `v'_n

}

*recoding in order
recode svy_end_fn_qcoutcomes_aq2_n (3=1 "Strongly agree") (5=2 "Tend to agree")
(2=3 "Neither agree nor disagree") (6=4 "Tend to disagree") (4=5 " Strongly disagree")
(1=6 "Dont know"), into (svy_end_fn_qcoutcomes_aq2_en)
```

```
*recode: bq2
recode svy_end_fn_qcoutcomes_bq2_n (3=1 "Strongly agree") (5=2 "Tend to agree")
(2=3 "Neither agree nor disagree") (6=4 "Tend to disagree") (4=5 " Strongly disagree")
(1=6 "Dont know"), into (svy_end_fn_qcoutcomes_bq2_en)

*recode cq2
recode svy_end_fn_qcoutcomes_cq2_n (3=1 "Strongly agree") (5=2 "Tend to agree")
(2=3 "Neither agree nor disagree") (6=4 "Tend to disagree") (4=5 " Strongly disagree")
(1=6 "Dont know"), into (svy_end_fn_qcoutcomes_cq2_en)

*recode dq2
recode svy_end_fn_qcoutcomes_dq2_n (3=1 "Strongly agree") (5=2 "Tend to agree")
(2=3 "Neither agree nor disagree") (6=4 "Tend to disagree") (4=5 " Strongly disagree")
(1=6 "Dont know"), into (svy_end_fn_qcoutcomes_dq2_en)

*current work status
encode svy_end_fn_qcurrentwork, gen(svy_end_fn_qcurrentwork_en)
codebook svy_end_fn_qcurrentwork_en


//Future plans (This should feed into the parent/carer outcome section)
*QTRAINFO: (var name: svy_end_fn_qtrainfo_en) Were you given any information about
other courses you could do after this course?
codebook svy_end_fn_qtrainfo
encode svy_end_fn_qtrainfo, g(svy_end_fn_qtrainfo_n)
recode svy_end_fn_qtrainfo_n (3=1 "Yes") (2=2 "No")(1=3 "Dont know/cant remember"),
into(svy_end_fn_qtrainfo_en)

*QTRAIN1: Are you planning to do any courses or training?
codebook svy_end_fn_qtrain1
encode svy_end_fn_qtrain1, g(svy_end_fn_qtrain1_n)
recode svy_end_fn_qtrain1_n (5=1 "Yes – I have started more study or training") (4=2
"Yes – I am going to start more study or training") (2=3 "No") (1=4 "Dont know") (3=5
"Prefer not to say"), into(svy_end_fn_qtrain1_en)

ta svy_end_fn_qtrain1_en treat

*QTRAIN2 What sort of course or training
codebook svy_end_fn_qtrain2
encode svy_end_fn_qtrain2, g(svy_end_fn_qtrain2_en)
ta svy_end_fn_qtrain2_en treat

*QTRAIN3 What level of qualification will you have if you finish that course or training?
codebook svy_end_fn_qtrain3
encode svy_end_fn_qtrain3, g(svy_end_fn_qtrain3_en)

*svy_end_fn_qtrain4: To what extent, if any, did your experience of the programme
influence your decision to take up the further course
codebook svy_end_fn_qtrain4
```

```
encode svy_end_fn_qtrain4, g(svy_end_fn_qtrain4_en)

*codebook of all qtrain1-4
foreach v in svy_end_fn_qtrain1_en svy_end_fn_qtrain2_en svy_end_fn_qtrain3_en
svy_end_fn_qtrain4_en ///
{
codebook `v'
}

*QFUTURECOURSEA Have you signed up or are you planning to sign up for a maths
course in the future?
codebook svy_end_fn_qfuturecoursea
encode svy_end_fn_qfuturecoursea, g(svy_end_fn_qfuturecoursea_n)
recode svy_end_fn_qfuturecoursea_n (3=1 "Yes") (2=2 "No") (1=3 "Haven't decided
yet"), into(svy_end_fn_qfuturecoursea_en)

*svy_end_fn_qfuturecourseb- which course have you enrolled in or are planning to enrol
in? -- open text
codebook svy_end_fn_qfuturecourseb
encode svy_end_fn_qfuturecourseb, gen(svy_end_fn_qfuturecourseb_en)
ta svy_end_fn_qfuturecourseb_en //THIS IS OPEN TEXT

//Satisfaction questions
*QSATALL Overall, how satisfied or dissatisfied were you with the programme?
codebook svy_end_fn_qsatall
encode svy_end_fn_qsatall, g(svy_end_fn_qsatall_n)
recode svy_end_fn_qsatall_n ( 5= 1 "Very satisfied") (2= 2 "Fairly satisfied") (3= 3
"Neither satisfied nor disatisfied") (1= 4 "Fairly dissatisfied") (4= 5 "Very dissatisfied"),
into(svy_end_fn_qsatall_en)

codebook svy_end_fn_qsatoth_aq2 svy_end_fn_qsatoth_bq2 svy_end_fn_qsatoth_cq2
svy_end_fn_qsatoth_dq2 svy_end_fn_qsatoth_eq2 svy_end_fn_qsatoth_fq2
svy_end_fn_qsatoth_gq2 svy_end_fn_qsatoth_hq2 svy_end_fn_qsatoth_iq2
svy_end_fn_qsatoth_jq2 svy_end_fn_qsatoth_kq2 svy_end_fn_qsatoth_lq2
svy_end_fn_qsatoth_mq2 svy_end_fn_qsatoth_nq2

foreach v in svy_end_fn_qsatoth_aq2 svy_end_fn_qsatoth_bq2 svy_end_fn_qsatoth_cq2
svy_end_fn_qsatoth_dq2 svy_end_fn_qsatoth_eq2 svy_end_fn_qsatoth_fq2
svy_end_fn_qsatoth_gq2 svy_end_fn_qsatoth_hq2 svy_end_fn_qsatoth_iq2
svy_end_fn_qsatoth_jq2 svy_end_fn_qsatoth_kq2 svy_end_fn_qsatoth_lq2
svy_end_fn_qsatoth_mq2 svy_end_fn_qsatoth_nq2 {

        encode `v', g(`v'_n)
}

foreach v in svy_end_fn_qsatoth_aq2 svy_end_fn_qsatoth_bq2 svy_end_fn_qsatoth_cq2
svy_end_fn_qsatoth_dq2 svy_end_fn_qsatoth_eq2 svy_end_fn_qsatoth_fq2
svy_end_fn_qsatoth_gq2 svy_end_fn_qsatoth_hq2 svy_end_fn_qsatoth_iq2
svy_end_fn_qsatoth_jq2 svy_end_fn_qsatoth_kq2 svy_end_fn_qsatoth_lq2
svy_end_fn_qsatoth_mq2 svy_end_fn_qsatoth_nq2 {
```

```
        codebook `v'_n
}

*--recoding
* a) svy_end_fn_qsatoth_aq2_n
recode svy_end_fn_qsatoth_aq2_n ///
    (4 = 5 "very satisfied") ///
    (2 = 4 "fairly satisfied") ///
    (3 = 3 "neither satisfied nor dissatisfied") ///
    (1 = 2 "fairly dissatisfied") ///
    (. = .), ///
    into(svy_end_fn_qsatoth_aq2_en)

* b) svy_end_fn_qsatoth_bq2_n
recode svy_end_fn_qsatoth_bq2_n ///
    (3 = 5 "very satisfied") ///
    (1 = 4 "fairly satisfied") ///
    (2 = 3 "neither satisfied nor dissatisfied") ///
    (. = .), ///
    into(svy_end_fn_qsatoth_bq2_en)

* c) svy_end_fn_qsatoth_cq2_n
recode svy_end_fn_qsatoth_cq2_n ///
    (5 = 5 "very satisfied") ///
    (2 = 4 "fairly satisfied") ///
    (3 = 3 "neither satisfied nor dissatisfied") ///
    (1 = 2 "fairly dissatisfied") ///
    (4 = 1 "very dissatisfied") ///
    (. = .), ///
    into(svy_end_fn_qsatoth_cq2_en)

* d) svy_end_fn_qsatoth_dq2_n
recode svy_end_fn_qsatoth_dq2_n ///
    (3 = 5 "very satisfied") ///
    (1 = 4 "fairly satisfied") ///
    (2 = 3 "neither satisfied nor dissatisfied") ///
    (. = .), ///
    into(svy_end_fn_qsatoth_dq2_en)

* e) svy_end_fn_qsatoth_eq2_n
recode svy_end_fn_qsatoth_eq2_n ///
    (4 = 5 "very satisfied") ///
    (2 = 4 "fairly satisfied") ///
    (3 = 3 "neither satisfied nor dissatisfied") ///
    (1 = 2 "fairly dissatisfied") ///
    (. = .), ///
    into(svy_end_fn_qsatoth_eq2_en)

* f) svy_end_fn_qsatoth_fq2_n
```

```
recode svy_end_fn_qsatoth_fq2_n ///
    (4 = 5 "very satisfied") ///
    (2 = 4 "fairly satisfied") ///
    (3 = 3 "neither satisfied nor dissatisfied") ///
    (1 = 2 "fairly dissatisfied") ///
    (. = .), ///
    into(svy_end_fn_qsatoth_fq2_en)

* g) svy_end_fn_qsatoth_gq2_n
recode svy_end_fn_qsatoth_gq2_n ///
    (4 = 5 "very satisfied") ///
    (2 = 4 "fairly satisfied") ///
    (3 = 1 "very dissatisfied") ///
    (1 = 2 "fairly dissatisfied") ///
    (. = .), ///
    into(svy_end_fn_qsatoth_gq2_en)

* h) svy_end_fn_qsatoth_hq2_n
recode svy_end_fn_qsatoth_hq2_n ///
    (3 = 5 "very satisfied") ///
    (2 = 4 "fairly satisfied") ///
    (1 = 2 "fairly dissatisfied") ///
    (. = .), ///
    into(svy_end_fn_qsatoth_hq2_en)

* i) svy_end_fn_qsatoth_iq2_n
recode svy_end_fn_qsatoth_iq2_n ///
    (3 = 5 "very satisfied") ///
    (1 = 4 "fairly satisfied") ///
    (2 = 3 "neither satisfied nor dissatisfied") ///
    (. = .), ///
    into(svy_end_fn_qsatoth_iq2_en)

* j) svy_end_fn_qsatoth_jq2_n
recode svy_end_fn_qsatoth_jq2_n ///
    (3 = 5 "very satisfied") ///
    (1 = 4 "fairly satisfied") ///
    (2 = 1 "very dissatisfied") ///
    (. = .), ///
    into(svy_end_fn_qsatoth_jq2_en)

* k) svy_end_fn_qsatoth_kq2_n
recode svy_end_fn_qsatoth_kq2_n ///
    (2 = 5 "very satisfied") ///
    (1 = 4 "fairly satisfied") ///
    (. = .), ///
    into(svy_end_fn_qsatoth_kq2_en)

* l) svy_end_fn_qsatoth_lq2_n
recode svy_end_fn_qsatoth_lq2_n ///
```

```
    (4 = 5 "very satisfied") ///
    (1 = 4 "fairly satisfied") ///
    (2 = 3 "neither satisfied nor dissatisfied") ///
    (3 = 1 "very dissatisfied") ///
    (. = .), ///
    into(svy_end_fn_qsatoth_lq2_en)

* m) svy_end_fn_qsatoth_mq2_n
recode svy_end_fn_qsatoth_mq2_n ///
    (4 = 5 "very satisfied") ///
    (2 = 4 "fairly satisfied") ///
    (3 = 3 "neither satisfied nor dissatisfied") ///
    (1 = 2 "fairly dissatisfied") ///
    (. = .), ///
    into(svy_end_fn_qsatoth_mq2_en)

* n) svy_end_fn_qsatoth_nq2_n
recode svy_end_fn_qsatoth_nq2_n ///
    (5 = 5 "very satisfied") ///
    (2 = 4 "fairly satisfied") ///
    (3 = 3 "neither satisfied nor dissatisfied") ///
    (1 = 2 "fairly dissatisfied") ///
    (4 = 1 "very dissatisfied") ///
    (. = .), ///
    into(svy_end_fn_qsatoth_nq2_en)

        label var svy_end_fn_qsatoth_aq2_en "The quality of the session delivery"
        label var svy_end_fn_qsatoth_bq2_en "The content of any learning materials,
workbooks or reading materials in the sessions"
        label var svy_end_fn_qsatoth_cq2_en "The homework requirements"
        label var svy_end_fn_qsatoth_dq2_en "The weekly structure of the programme"
        label var svy_end_fn_qsatoth_eq2_en "The length of each session"
        label var svy_end_fn_qsatoth_fq2_en "The amount of time allocated to different
activities within each session"
        label var svy_end_fn_qsatoth_gq2_en "The overall length of the programme"
        label var svy_end_fn_qsatoth_hq2_en "The timing of the sessions"
        label var svy_end_fn_qsatoth_iq2_en "The venue of the sessions"
        label var svy_end_fn_qsatoth_jq2_en "Communication about the sessions
including objective of the sessions, and level of engagement expected"
        label var svy_end_fn_qsatoth_kq2_en "The information provided about other
programmes to do"
        label var svy_end_fn_qsatoth_lq2_en "The difficulty of the maths covered"
        label var svy_end_fn_qsatoth_mq2_en "The overall experience"
        label var svy_end_fn_qsatoth_nq2_en "The amount of time my/your child spent
with you doing the programme"


foreach v in svy_end_fn_qsatoth_aq2 svy_end_fn_qsatoth_bq2 svy_end_fn_qsatoth_cq2
svy_end_fn_qsatoth_dq2 svy_end_fn_qsatoth_eq2 svy_end_fn_qsatoth_fq2
svy_end_fn_qsatoth_gq2 svy_end_fn_qsatoth_hq2 svy_end_fn_qsatoth_iq2
```

```
svy_end_fn_qsatoth_jq2 svy_end_fn_qsatoth_kq2 svy_end_fn_qsatoth_lq2
svy_end_fn_qsatoth_mq2 svy_end_fn_qsatoth_nq2 {

        codebook `v' `v'_en
}
```

*QDISAT- (reasons) why dissatisfied with prog overall – no observations from those who responded in endline sample (although there are two responses from those who are not part of the generated endline sample)- as there are partial completions

```
codebook svy_end_fn_qdisat svy_end_fn_qdisat01 svy_end_fn_qdisat02 ///
svy_end_fn_qdisat03 svy_end_fn_qdisat04 svy_end_fn_qdisat05 svy_end_fn_qdisat06
///
svy_end_fn_qdisat07 svy_end_fn_qdisat08 svy_end_fn_qdisat09 svy_end_fn_qdisat10
///
svy_end_fn_qdisat11 svy_end_fn_qdisat12 svy_end_fn_qdisat13 svy_end_fn_qdisat14
///
svy_end_fn_qdisat15 svy_end_fn_qdisat16
```

*encoding variables: svy_end_fn_qdisat split into 01 to 16 with Yes/No responses

```
foreach v in svy_end_fn_qdisat svy_end_fn_qdisat01 svy_end_fn_qdisat02 ///
svy_end_fn_qdisat03 svy_end_fn_qdisat04 svy_end_fn_qdisat05 svy_end_fn_qdisat06
///
svy_end_fn_qdisat07 svy_end_fn_qdisat08 svy_end_fn_qdisat09 svy_end_fn_qdisat10
///
svy_end_fn_qdisat11 svy_end_fn_qdisat12 svy_end_fn_qdisat13 svy_end_fn_qdisat14
///
svy_end_fn_qdisat15 svy_end_fn_qdisat16 {
        encode `v', gen(`v'_en)
        codebook `v'_en
}
```

*QDISWHYCONT var name: svy_end_fn_qdiswhycontqdiswhyco "You said you were dissatisfied with the content of the learning materials. Why was this?"- only 2 responses

```
codebook svy_end_fn_qdiswhycont svy_end_fn_qdiswhycont1 ///
svy_end_fn_qdiswhycont2 svy_end_fn_qdiswhycont3 svy_end_fn_qdiswhycont4 ///
svy_end_fn_qdiswhycont5 svy_end_fn_qdiswhycont6 svy_end_fn_qdiswhycont7
```

*encoding variables: svy_end_fn_qdiswhycont split into 01 to 07 with Yes/No responses

```
foreach v in svy_end_fn_qdiswhycont svy_end_fn_qdiswhycont1 ///
svy_end_fn_qdiswhycont2 svy_end_fn_qdiswhycont3 svy_end_fn_qdiswhycont4 ///
svy_end_fn_qdiswhycont5 svy_end_fn_qdiswhycont6 svy_end_fn_qdiswhycont7 ///
{
        encode `v', g(`v'_en)
        codebook `v'_en

}
```

*QDISWHYTEACH var name: svy_end_fn_qdiswhyteachqdiswhyt "You said you were dissatisfied with the quality of the session delivery. Why was this?"-

```
*svy_end_fn_qdiswhyteach has multiple response for one respondent
codebook svy_end_fn_qdiswhyteach svy_end_fn_qdiswhyteach1
svy_end_fn_qdiswhyteach2 svy_end_fn_qdiswhyteach3 svy_end_fn_qdiswhyteach4
svy_end_fn_qdiswhyteach5 svy_end_fn_qdiswhyteach6 svy_end_fn_qdiswhyteach7
svy_end_fn_qdiswhyteach8 svy_end_fn_qdiswhyteach9

*encoding variables: svy_end_fn_qdiswhyteach split into 01 to 09 with Yes/No responses
foreach v in svy_end_fn_qdiswhyteach svy_end_fn_qdiswhyteach1 ///
svy_end_fn_qdiswhyteach2 svy_end_fn_qdiswhyteach3 svy_end_fn_qdiswhyteach4 ///
svy_end_fn_qdiswhyteach5 svy_end_fn_qdiswhyteach6 svy_end_fn_qdiswhyteach7 ///
svy_end_fn_qdiswhyteach8 svy_end_fn_qdiswhyteach9 ///
{
        encode `v', g(`v'_en)
}

foreach v in svy_end_fn_qdiswhyteach svy_end_fn_qdiswhyteach1 ///
svy_end_fn_qdiswhyteach2 svy_end_fn_qdiswhyteach3 svy_end_fn_qdiswhyteach4 ///
svy_end_fn_qdiswhyteach5 svy_end_fn_qdiswhyteach6 svy_end_fn_qdiswhyteach7 ///
svy_end_fn_qdiswhyteach8 svy_end_fn_qdiswhyteach9 ///
{
        codebook `v'_en
}

*QDISWHYHOMEWORK You said you were dissatisfied with the homework
requirements. Why was this? (Var name svy_end_fn_qdiswhyhomeworkqdisw )
codebook svy_end_fn_qdiswhyhomework svy_end_fn_qdiswhyhomework1
svy_end_fn_qdiswhyhomework2 svy_end_fn_qdiswhyhomework3
svy_end_fn_qdiswhyhomework4 svy_end_fn_qdiswhyhomework5
svy_end_fn_qdiswhyhomework6 svy_end_fn_qdiswhyhomework7
svy_end_fn_qdiswhyhomework8

*encoding variables: svy_end_fn_qdiswhyhomework split into 01 to 08 with Yes/No
responses
foreach v in svy_end_fn_qdiswhyhomework svy_end_fn_qdiswhyhomework1 ///
svy_end_fn_qdiswhyhomework2 svy_end_fn_qdiswhyhomework3 ///
svy_end_fn_qdiswhyhomework4 svy_end_fn_qdiswhyhomework5 ///
svy_end_fn_qdiswhyhomework6 svy_end_fn_qdiswhyhomework7
svy_end_fn_qdiswhyhomework8 ///
{
        encode `v', g(`v'_en)
}

foreach v in svy_end_fn_qdiswhyhomework svy_end_fn_qdiswhyhomework1 ///
svy_end_fn_qdiswhyhomework2 svy_end_fn_qdiswhyhomework3 ///
svy_end_fn_qdiswhyhomework4 svy_end_fn_qdiswhyhomework5 ///
svy_end_fn_qdiswhyhomework6 svy_end_fn_qdiswhyhomework7
svy_end_fn_qdiswhyhomework8 ///
{
        codebook `v'_en
```

```
}

*QTRIALSATISFACTION No observations for overall trial satisfaction
codebook svy_end_prep_qtrialsatisfaction //all empty

//Experience of the course- easiness, challenges
*QEASE Would you say that the maths covered on your course was?
codebook svy_end_fn_qease
encode svy_end_fn_qease, g(svy_end_fn_qease_n)
recode svy_end_fn_qease_n (4=1 "Too easy") (1=2 "About right")(3=3 "Too difficult")(2=4
"Don't know / can't remember"), into(svy_end_fn_qease_en)

*QCHALLENGES Did you face any of the following challenges related to the
programme? – this var missing

label var svy_end_fn_qchallenges_aq2 "It was difficult to take time out of my day to
attend the programme"
label var svy_end_fn_qchallenges_bq2 "It was difficult to take time out of my/your day to
complete activities with my/your child at home"
label var svy_end_fn_qchallenges_cq2 "It was difficult to understand what I/you needed
to do for the activities with my/your child at home"
label var svy_end_fn_qchallenges_dq2 "did not have the appropriate tools/resources to
complete activities with my/your child at home"
label var svy_end_fn_qchallenges_eq2 "It was difficult to understand the maths covered
by the course"

codebook svy_end_fn_qchallenges_aq2 svy_end_fn_qchallenges_bq2
svy_end_fn_qchallenges_cq2 svy_end_fn_qchallenges_dq2
svy_end_fn_qchallenges_eq2

*responses only for T
foreach v in svy_end_fn_qchallenges_aq2 svy_end_fn_qchallenges_bq2 ///
svy_end_fn_qchallenges_cq2 svy_end_fn_qchallenges_dq2 ///
svy_end_fn_qchallenges_eq2 ///
{
        encode `v', g(`v'_en)
}

*encoded indicators on challenegs faced- Yes/No/Dont know responses
foreach v in svy_end_fn_qchallenges_aq2 svy_end_fn_qchallenges_bq2 ///
svy_end_fn_qchallenges_cq2 svy_end_fn_qchallenges_dq2 ///
svy_end_fn_qchallenges_eq2 ///
{
        codebook `v'_en

}

*QENGAGING Overall, how engaging did you find the programme?
codebook svy_end_fn_qengaging
encode svy_end_fn_qengaging, g(svy_end_fn_qengaging_n)
```

```
recode svy_end_fn_qengaging_n (4=1 "Very engaging") (2=2 "Fairly engaging") (3=3
"Neutral") (1=4 "Dont know"), into(svy_end_fn_qengaging_en)
ta svy_end_fn_qengaging_en

*svy_end_fn_qrec: QREC How likely are you to recommend a similar programme to
people you know?
codebook svy_end_fn_qrec
encode svy_end_fn_qrec, g(svy_end_fn_qrec_n)
recode svy_end_fn_qrec_n (1=1 "I have already recommended it")(5=2 "Very likely")(3=3
"Quite likely")(2=4 " Neither likely nor unlikely")(4=5 " Quite unlikely")(6=6 "Very unlikely"),
into(svy_end_fn_qrec_en)

*QCHANGE. Thinking about your whole experience of the programme, what would be
one thing that you would change to improve it for others?
codebook svy_end_fn_qchange if svy_end_fn_qchange!= "" //open text -- this is coded in
excel, table attached in appendix

*QSUGGESTIONS Do you have any suggestions about how to improve the programme?
codebook svy_end_fn_qsuggestions if svy_end_fn_qsuggestions!= "" //open text -- this is
coded in excel, table attached in appendix

*QCOMMENTS: Any further comments not captured before
codebook svy_end_fn_qcomments if svy_end_fn_qcomments!= "" //open text

*variables with codes -- (missing desciption FN data codebook)
codebook svy_bs_qagecodes svy_bs_qparentcodes svy_end_fn_qchangecodes
svy_end_fn_qcommentscodes svy_end_fn_qfuturecoursebcodes
svy_end_fn_qparentcodes svy_end_fn_qsuggestionscodes
br svy_bs_qagecodes if svy_bs_qagecodes != "" // all 'prefer not to say'
br svy_end_fn_qchangecodes svy_end_fn_qchange if svy_end_fn_qchangecodes != ""
//all marked 'nothing'
br svy_end_fn_qcommentscodes if svy_end_fn_qcommentscodes != "" // all marked 'no
further comments'
br svy_end_fn_qfuturecoursebcodes if svy_end_fn_qfuturecoursebcodes ! = "" // all
marked 'prefer not to say'
br svy_end_fn_qparentcodes // all marked 'none' and 'prefer not to say'
br svy_end_fn_qsuggestionscodes if svy_end_fn_qsuggestionscodes != "" // all marked
'no suggestions'

foreach v in svy_bs_qagecodes svy_bs_qparentcodes svy_end_fn_qchangecodes
svy_end_fn_qcommentscodes svy_end_fn_qfuturecoursebcodes
svy_end_fn_qparentcodes {
        encode `v', gen(`v'_en)
        codebook `v'_en
}

encode svy_end_fn_qsuggestionscodes, gen(svy_end_fn_qsuggestcode_en)

*attended_sessions
codebook attended_sessions
```

```
/*Label and recode attended_sessions*/
#delimit ;
label define attended_sessions_label ///
    1 "At-least one session attended" ///
    0 "No session attended" ;
#delimit cr // Not sure of this is correct coding- NEED to DOUBLE CHECK

label values attended_sessions attended_sessions_label

*check
ta attended_sessions treat
//ILR attendance vars by sessions
foreach v in session1n_c session1n_hl session1n_p session2ssm_c session2ssm_hl
session2ssm_p session3s_c session3s_hl session3s_p session4ssm2_c
session4ssm2_hl session4ssm2_p session5n2_c session5n2_hl session5n2_p
session6s2_c session6s2_hl session6s2_p {
        codebook `v'
        encode `v', g(`v'_en)
}

*child attendance:
codebook session1n_c_en session2ssm_c_en session3s_c_en session4ssm2_c_en
session5n2_c_en session6s2_c_en
foreach v in session1n_c_en session2ssm_c_en ///
session3s_c_en session5n2_c_en ///
session6s2_c_en ///
{
        codebook `v'
        recode `v' (2 4 =1 "Yes, in full")(3 = 2 "Yes, in part")(1=3 "Absent"), into(`v'_repl)
        codebook `v'_repl
}

recode session4ssm2_c_en (3 5 = 1 "Yes, in full") (4= 2 "Yes, in part") (2 1 = 3 "Absent"),
into(session4ssm2_c_en_repl)
codebook session4ssm2_c_en_repl

foreach v in session1n_c_en session2ssm_c_en ///
session3s_c_en session4ssm2_c_en session5n2_c_en ///
session6s2_c_en ///
{
        drop `v'
    ren `v'_repl `v'
        codebook `v'
}

*labeling
label var session1n_c_en "Child attendance in first session on Numbers"
label var session2ssm_c_en "Child attendance in second session on Shape, Space and
Measure"
```

```
label var session3s_c_en "Child attendance in third session on Statistics"
label var session4ssm2_c_en "Child attendance in fourth session on Shape, Space and
Measure-2"
label var session5n2_c_en "Child attendance in fifth session on Number-2"
label var session6s2_c_en "Child attendance in sixth session on Statistics"

*Parent attendance
codebook session1n_p_en session2ssm_p_en session3s_p_en session4ssm2_p_en
session5n2_p_en session6s2_p_en

foreach v in session2ssm_p_en session3s_p_en session4ssm2_p_en session6s2_p_en
///
{
        codebook `v'
        recode `v' ( 2 3 = 1 "Yes, in full") (1 = 2 "Absent"), into(`v'_repl) //in these cases we
dont have 'in part attendance'
        codebook `v'_repl
}

foreach v in session2ssm_p_en session3s_p_en session4ssm2_p_en session6s2_p_en
///_p_en session4ssm2_p_en ///
{
        drop `v'
        ren `v'_repl `v'
        codebook `v'

}

foreach v in session1n_p_en session5n2_p_en ///
{
        codebook `v'
        recode `v' (2 4 = 1 "Yes, in full")(3 = 2 "Yes, in part") (1 = 3 "Absent"), into(`v'_repl)
//in these cases we dont have 'in part attendance'
        codebook `v'_repl
}

foreach v in session1n_p_en session5n2_p_en ///
{
   drop `v'
        ren `v'_repl `v'
        codebook `v'
}

*label
label var session1n_p_en "Parent attendance in first session on Numbers"
label var session2ssm_p_en "Parent attendance in second session on Shape, Space and
Measure"
label var session3s_p_en "Parent attendance in third session on Statistics"
label var session4ssm2_p_en "Parent attendance in fourth session on Shape, Space and
Measure-2"
```

```
label var session5n2_p_en "Parent attendance in fifth session on Number-2"
label var session6s2_p_en "Parent attendance in sixth session on Statistics-2"

*home learning attendance
codebook session1n_hl_en session2ssm_hl_en session3s_hl_en session4ssm2_hl_en
session5n2_hl_en session6s2_hl_en

foreach v in session1n_hl_en session2ssm_hl_en ///
session3s_hl_en session4ssm2_hl_en session5n2_hl_en ///
session6s2_hl_en ///
{
        codebook `v'
        recode `v' (2 4 = 1 "Yes, in full")(3 = 2 "Yes, in part") (1 = 3 "Absent")(.= 4
"missing"), into(`v'_repl) //in these cases we dont have 'in part attendance'
        codebook `v'_repl
}

foreach v in session1n_hl_en session2ssm_hl_en ///
session3s_hl_en session4ssm2_hl_en session5n2_hl_en ///
session6s2_hl_en ///
{
        drop `v'
        ren `v'_repl `v'
        codebook `v'
}

label var session1n_hl_en "home learning attendance in first session on Numbers"
label var session2ssm_hl_en "home learning attendance in second session on Shape,
Space and Measure"
label var session3s_hl_en "home learning attendance in third session on Statistics"
label var session4ssm2_hl_en "home learning attendance in fourth session on Shape,
Space and Measure-2"
label var session5n2_hl_en "home learning attendance in fifth session on Number-2"
label var session6s2_hl_en "home learning attendance in sixth session on Statistics-2"

*****************************************************************************************
*inspecting identifiers
codebook learnerreferencenumber // all missing
codebook ilr_uln ilr_learnrefnumber
codebook ilr_learnrefnumber
codebook ilr_uln
codebook ilr_campid // Campus Identifier within a college group
codebook uniquelearnerid //0 missing -- unique ID to be used for learner count

*ilr_learnaimreftitle_aim*-- The full title associated with the learning aim-- Not Applicable
codebook ilr_learnaimreftitle_aim1 ilr_learnaimreftitle_aim2 ilr_learnaimreftitle_aim3
ilr_learnaimreftitle_aim4 ilr_learnaimreftitle_aim5 ilr_learnaimreftitle_aim6
ilr_learnaimreftitle_aim7 ilr_learnaimreftitle_aim8 ilr_learnaimreftitle_aim9
ilr_learnaimreftitle_aim10 ilr_learnaimreftitle_aim11 ilr_learnaimreftitle_aim12
ilr_learnaimreftitle_aim13 ilr_learnaimreftitle_aim14 ilr_learnaimreftitle_aim15
```

```
ilr_learnaimreftitle_aim16 ilr_learnaimreftitle_aim17 ilr_learnaimreftitle_aim18
ilr_learnaimreftitle_aim19 ilr_learnaimreftitle_aim20 //12 to 20 -- all empty

*encoding 1 to 11 given 12 to 20 are empty
foreach i in ilr_learnaimreftitle_aim1 ilr_learnaimreftitle_aim2 ilr_learnaimreftitle_aim3
ilr_learnaimreftitle_aim4 ilr_learnaimreftitle_aim5 ilr_learnaimreftitle_aim6
ilr_learnaimreftitle_aim7 ilr_learnaimreftitle_aim8 ilr_learnaimreftitle_aim9
ilr_learnaimreftitle_aim10 ilr_learnaimreftitle_aim11 {
        encode `i', g(`i'_en)

}

//to identify codes assignd to RCT - FN in each aim tyype
foreach i in ilr_learnaimreftitle_aim1 ilr_learnaimreftitle_aim2  ilr_learnaimreftitle_aim4
ilr_learnaimreftitle_aim5 ilr_learnaimreftitle_aim6 ilr_learnaimreftitle_aim7 {

codebook `i'_en if `i'== "RCT - Multiply (numeracy) provision for parents wanting to
increase their numeracy skills in order to help their children, and help with their own
progression"

}

*aim3
codebook ilr_learnaimreftitle_aim3_en if ilr_learnaimreftitle_aim3 == "Multiply (numeracy)
provision for parents wanting to increase their numeracy skills in order to help their
children, and help with their own progression,11 to 20 hours"

//for reference: aim1: 70, aim2: 41, aim3:13 , aim4: 23, aim5: 14, aim6: 12, aim7: 9

//to check unique coutn for those where either of the aim (1to 7) is RCT FN- as 8 to 11
does not report FN and 12 to 20 are empty
codebook uniquelearnerid treat if (ilr_learnaimreftitle_aim1_en == 70 |
ilr_learnaimreftitle_aim2_en == 41 | ilr_learnaimreftitle_aim3_en == 13 |
ilr_learnaimreftitle_aim4_en == 23 | ilr_learnaimreftitle_aim5_en == 14 |
ilr_learnaimreftitle_aim6_en == 12 | ilr_learnaimreftitle_aim7_en == 9) //All 82 are treated
-- no control parent receieved intervention in this batch

//Dmeography
* variables ilr_ethnicity ilr_sex ilr_llddhealthprob ilr_mathgrade -- already coded and
merged above
codebook ilr_ethnicity_en
codebook ilr_sex_en
codebook ilr_llddhealthprob_en
codebook ilr_mathgrade_en

*these need cleaning
codebook ilr_l_empstatfdl //The learner's employment status on the first day of learning
ta ilr_l_empstatfdl

*17-26 and 98
```

```
recode ilr_l_empstatfdl (18= 1 "Not in paid employment, not looking for work and/or not
available to start work") ///
(17 = 2 "Not in paid employment, looking for work and and available for work") ///
(19 = 3 "Learner is employed for 0 to 10 hours per week") ///
(20 = 4 "Learner is employed for 11 to 20 hours per week") ///
(21 = 5 "Learner is employed for 21 to 30 hours per week") ///
(22 = 6 "Learner is employed for 31+ hours per week") ///
(23 = 7 "Learner is Self-Employed for 0 to 10 hours per week") ///
(24 = 8 "Learner is Self-Employed for 11 to 20 hours per week") ///
(25 = 9 "Learner is Self-Employed for 21 to 30 hours per week") ///
(26 = 10 "Learner is Self-Employed for 31+ hours per week") ///
(98 = . ), into(ilr_l_empstatfdl_en)

ta ilr_l_empstatfdl_en
ta ilr_l_empstatfdl_en , nolabel
label var ilr_l_empstatfdl_en "Learner's employment status on the first day of erolment"
ta ilr_l_empstatfdl_en treat

// Learner's employment status on the first day of erolment
recode ilr_l_empstatfdl_en (1=1 "Not in paid employment, not looking for work and/or not
available to start work") (2 = 2 "Not in paid employment, looking for work and and
available for work") (3 4 5 = 3 "Learner is employed for 0 to 30 hours per week") (6 = 4
"Learner is employed for 31+ hours per week") (7 8 9 = 5 "Learner is Self-Employed for 0
to 30 hours per week") (10 = 6 "Learner is Self-Employed for 31+ hours per
week"),into(ilr_empstatdl_en)

ta ilr_empstatdl_en

//The learner's employment status prior to enrolment (prior to learning)
*L_EmpStatPrior
codebook ilr_l_empstatprior
ta ilr_l_empstatprior

recode ilr_l_empstatprior (17= 1 "Not in paid employment, looking for work and available
to start work") ///
(18 = 2 "Not in paid employment,not looking for work and/or not available for work") ///
(19 = 3 "Learner is employed for 0 to 10 hours per week") ///
(20 = 4 "Learner is employed for 11 to 20 hours per week") ///
(21 = 5 "Learner is employed for 21 to 30 hours per week") ///
(22 = 6 "Learner is employed for 31+ hours per week") ///
(23 = 7 "Learner is Self-Employed for 0 to 10 hours per week") ///
(24 = 8 "Learner is Self-Employed for 11 to 20 hours per week") ///
(25 = 9 "Learner is Self-Employed for 21 to 30 hours per week") ///
(26 = 10 "Learner is Self-Employed for 31+ hours per week") ///
(98 = 11 "Not known/not recorded"), into(ilr_l_empstatprior_en)

label var ilr_l_empstatprior_en "Learner's employment status prior to erolment"
ta ilr_l_empstatprior_en treat

// Length of Unemploment on First Day of Learning
```

```
codebook ilr_l_lenunemp

recode ilr_l_lenunemp (1=1 "Learner has been unemployed for less than 6 months") ///
(2=2 "Learner has been unemployed for 6-11 months") ///
(3=3 "Learner has been unemployed for 12-23 months") ///
(4=4 "Learner has been unemployed for 24-35 months") ///
(5=5 "Learner has been unemployed for 36 months or more") ///
(-1=6 "Not Collected"), into(ilr_l_lenunemp_en)
label var ilr_l_lenunemp_en " Length of Unemploment on First Day of Learning"
ta ilr_l_lenunemp_en treat

// Benefit Status prior to starting
codebook ilr_l_unempbenpriorstart

recode ilr_l_unempbenpriorstart  (0=1 "Not in receipt of benefits") ///
(1=2 "Learner is in receipt of job seekers allowance (JSA)") ///
(3=3 "Learner is in receipt of another state benefit other than JSA, Universal Credit or
ESA (WRAG)") ///
(4=4 " Learner is in receipt of Universal Credit ") ///
(6=5 "Learner is in receipt of other state benefits") ///
(-1=6 "Not Applicable/Not Known"), into(ilr_l_unempbenpriorstart_en)
label var ilr_l_unempbenpriorstart_en "Benefit Status"
ta ilr_l_unempbenpriorstart_en treat

//Maths background
codebook ilr_l_edfmath //GCSE maths achievement status --- all not applicable

//program participation related--
sum ilr_planlearnhours, det // Planned learning hours, numeric (0, 565)

*ilr_partnerukprn_aim* Subcontracted or partnership UKPRN
codebook ilr_partnerukprn_aim1 ilr_partnerukprn_aim2 ilr_partnerukprn_aim3 //2 values

codebook ilr_partnerukprn_aim4 ilr_partnerukprn_aim5 ilr_partnerukprn_aim6
ilr_partnerukprn_aim7 ilr_partnerukprn_aim8 ilr_partnerukprn_aim9
ilr_partnerukprn_aim10 ilr_partnerukprn_aim11 ilr_partnerukprn_aim12
ilr_partnerukprn_aim13 ilr_partnerukprn_aim14 ilr_partnerukprn_aim15
ilr_partnerukprn_aim16 ilr_partnerukprn_aim17 ilr_partnerukprn_aim18
ilr_partnerukprn_aim19 ilr_partnerukprn_aim20 //these are all empty

*ilr_aimtype_aim* --aim type --
codebook ilr_aimtype_aim1 ilr_aimtype_aim2 ilr_aimtype_aim3 ilr_aimtype_aim4
ilr_aimtype_aim5 ilr_aimtype_aim6 ilr_aimtype_aim7 ilr_aimtype_aim8 ilr_aimtype_aim9
ilr_aimtype_aim10 ilr_aimtype_aim11

codebook ilr_aimtype_aim12 ilr_aimtype_aim13 ilr_aimtype_aim14 ilr_aimtype_aim15
ilr_aimtype_aim16 ilr_aimtype_aim17 ilr_aimtype_aim18 ilr_aimtype_aim19
ilr_aimtype_aim20 // these are empty
```

```
foreach i in ilr_aimtype_aim1 ilr_aimtype_aim2 ilr_aimtype_aim3 ilr_aimtype_aim4
ilr_aimtype_aim5 ilr_aimtype_aim6 ilr_aimtype_aim7 ilr_aimtype_aim8 ilr_aimtype_aim9
ilr_aimtype_aim10 ilr_aimtype_aim11 {
        recode `i'(1=1 "Programme aim") ///
        (3=2 "Component learning aim within a programme") ///
        (4=3 "Learning aim that is not part of a programme") ///
        (5=4 "Core aim – (16-19 (excluding Apprenticeships) funded learning aims only)"),
into(`i'_en)
}

 *check
 foreach i in ilr_aimtype_aim1 ilr_aimtype_aim2 ilr_aimtype_aim3 ilr_aimtype_aim4
ilr_aimtype_aim5 ilr_aimtype_aim6 ilr_aimtype_aim7 ilr_aimtype_aim8 ilr_aimtype_aim9
ilr_aimtype_aim10 ilr_aimtype_aim11 {

        label var `i'_en "Aim type"
        codebook `i'_en

 }
```

ilr_aimseqnumber_aim -- Learning aim data set sequence valuyes from 01-98 as per ILR multiply data fiels

```
codebook ilr_aimseqnumber_aim1 ilr_aimseqnumber_aim2 ilr_aimseqnumber_aim3
ilr_aimseqnumber_aim4 ilr_aimseqnumber_aim5 ilr_aimseqnumber_aim6
ilr_aimseqnumber_aim7 ilr_aimseqnumber_aim8 ilr_aimseqnumber_aim9
ilr_aimseqnumber_aim10 ilr_aimseqnumber_aim11

codebook ilr_aimseqnumber_aim12 ilr_aimseqnumber_aim13 ilr_aimseqnumber_aim14
ilr_aimseqnumber_aim15 ilr_aimseqnumber_aim16 ilr_aimseqnumber_aim17
ilr_aimseqnumber_aim18 ilr_aimseqnumber_aim19 ilr_aimseqnumber_aim20 // these are
empty
```

lr_learnaimref_aim -- aim reference -- NA as per ILR multiply data fields: The learning aim reference code for the learning being undertaken Qualification Name, Notional Level, Aim Type, Notional Width and AOL

```
codebook ilr_learnaimref_aim1 ilr_learnaimref_aim2 ilr_learnaimref_aim3
ilr_learnaimref_aim4 ilr_learnaimref_aim5 ilr_learnaimref_aim6 ilr_learnaimref_aim7
ilr_learnaimref_aim8 ilr_learnaimref_aim9 ilr_learnaimref_aim10 ilr_learnaimref_aim11

codebook ilr_learnaimref_aim12 ilr_learnaimref_aim13 ilr_learnaimref_aim14
ilr_learnaimref_aim15 ilr_learnaimref_aim16 ilr_learnaimref_aim17 ilr_learnaimref_aim18
ilr_learnaimref_aim19 ilr_learnaimref_aim20  //these are all empty
```

ilr_learnaimreftype_aim-- The learning aim type of the learning aim-- refer to sheet learneraimtype in ILR Multiply data fields

```
codebook ilr_learnaimreftype_aim1 ilr_learnaimreftype_aim2 ilr_learnaimreftype_aim3
ilr_learnaimreftype_aim4 ilr_learnaimreftype_aim5 ilr_learnaimreftype_aim6
ilr_learnaimreftype_aim7 ilr_learnaimreftype_aim8 ilr_learnaimreftype_aim9
ilr_learnaimreftype_aim10 ilr_learnaimreftype_aim11
```

```
codebook ilr_learnaimreftype_aim12 ilr_learnaimreftype_aim13
ilr_learnaimreftype_aim14 ilr_learnaimreftype_aim15 ilr_learnaimreftype_aim16
ilr_learnaimreftype_aim17 ilr_learnaimreftype_aim18 ilr_learnaimreftype_aim19
ilr_learnaimreftype_aim20 // these are empty

foreach i in ilr_learnaimreftype_aim1 ilr_learnaimreftype_aim2 ilr_learnaimreftype_aim3
ilr_learnaimreftype_aim4 ilr_learnaimreftype_aim5 ilr_learnaimreftype_aim6
ilr_learnaimreftype_aim7 ilr_learnaimreftype_aim8 ilr_learnaimreftype_aim9
ilr_learnaimreftype_aim10 ilr_learnaimreftype_aim11 {
        recode `i' (6=1 "Diploma") ///
        (16=2 "Certificate") ///
        (1439=3 "Functional Skills") ///
        (1452=4 "Award") ///
        (4342=5 "Other") ///
        (9002=6 "BSc") ///
        (9110=7 "Foundation Degree"), into(`i'_en)

}

*check
foreach i in ilr_learnaimreftype_aim1 ilr_learnaimreftype_aim2 ilr_learnaimreftype_aim3
ilr_learnaimreftype_aim4 ilr_learnaimreftype_aim5 ilr_learnaimreftype_aim6
ilr_learnaimreftype_aim7 ilr_learnaimreftype_aim8 ilr_learnaimreftype_aim9
ilr_learnaimreftype_aim10 ilr_learnaimreftype_aim11 {

        label var `i'_en "Learning aim type of the learning aim"
        codebook `i'_en if `i'_en != .
}

*ilr_d_notionlev_v2_aim--  Notional NVQ Level of Learner Version 2 --
codebook ilr_d_notionlev_v2_aim1 ilr_d_notionlev_v2_aim2 ilr_d_notionlev_v2_aim3
ilr_d_notionlev_v2_aim4 ilr_d_notionlev_v2_aim5 ilr_d_notionlev_v2_aim6
ilr_d_notionlev_v2_aim7 ilr_d_notionlev_v2_aim8 ilr_d_notionlev_v2_aim9
ilr_d_notionlev_v2_aim10 ilr_d_notionlev_v2_aim11

codebook ilr_d_notionlev_v2_aim12 ilr_d_notionlev_v2_aim13 ilr_d_notionlev_v2_aim14
ilr_d_notionlev_v2_aim15 ilr_d_notionlev_v2_aim16 ilr_d_notionlev_v2_aim17
ilr_d_notionlev_v2_aim18 ilr_d_notionlev_v2_aim19 ilr_d_notionlev_v2_aim20 // these
are empty

codebook ilr_d_notionlev_v2_aim1
gen ilr_d_notionlev_v2_aim1_new = ""
replace ilr_d_notionlev_v2_aim1_new  = "Entry Level" if ilr_d_notionlev_v2_aim1 == 0
replace ilr_d_notionlev_v2_aim1_new  = "Level 1" if ilr_d_notionlev_v2_aim1 == 1
replace ilr_d_notionlev_v2_aim1_new  = "Level 1/2" if ilr_d_notionlev_v2_aim1 == 1.5
replace ilr_d_notionlev_v2_aim1_new  = "Level 2" if ilr_d_notionlev_v2_aim1 == 2
replace ilr_d_notionlev_v2_aim1_new  = "Level 3" if ilr_d_notionlev_v2_aim1 == 3
replace ilr_d_notionlev_v2_aim1_new  = "Level 4" if ilr_d_notionlev_v2_aim1 == 4
replace ilr_d_notionlev_v2_aim1_new  = "Level 5" if ilr_d_notionlev_v2_aim1 == 5
replace ilr_d_notionlev_v2_aim1_new  = "Level 6" if ilr_d_notionlev_v2_aim1 == 6
```

```
replace ilr_d_notionlev_v2_aim1_new  = "Level 7" if ilr_d_notionlev_v2_aim1 == 7
replace ilr_d_notionlev_v2_aim1_new  = "Level 8" if ilr_d_notionlev_v2_aim1 == 8
replace ilr_d_notionlev_v2_aim1_new  = "Higher Level" if ilr_d_notionlev_v2_aim1 == 9
replace ilr_d_notionlev_v2_aim1_new  = "Other Level" if ilr_d_notionlev_v2_aim1 == 99
replace ilr_d_notionlev_v2_aim1_new  = "Not known" if ilr_d_notionlev_v2_aim1 == -1

encode ilr_d_notionlev_v2_aim1_new, g(ilr_d_notionlev_v2_aim1_en)
codebook ilr_d_notionlev_v2_aim1_en

foreach i in ilr_d_notionlev_v2_aim2 ilr_d_notionlev_v2_aim3 ilr_d_notionlev_v2_aim4
ilr_d_notionlev_v2_aim5 ilr_d_notionlev_v2_aim6 ilr_d_notionlev_v2_aim7
ilr_d_notionlev_v2_aim8 ilr_d_notionlev_v2_aim9 ilr_d_notionlev_v2_aim10
ilr_d_notionlev_v2_aim11  {

gen `i'_new = ""
replace `i'_new  = "Entry Level" if `i' == 0
replace `i'_new  = "Level 1" if `i'  == 1
replace `i'_new  = "Level 1/2" if `i'  == 1.5
replace `i'_new  = "Level 2" if `i'  == 2
replace `i'_new  = "Level 3" if `i'  == 3
replace `i'_new  = "Level 4" if `i'  == 4
replace `i'_new  = "Level 5" if `i'  == 5
replace `i'_new  = "Level 6" if `i'  == 6
replace `i'_new  = "Level 7" if `i'  == 7
replace `i'_new  = "Level 8" if `i'  == 8
replace `i'_new  = "Higher Level" if `i'  == 9
replace `i'_new  = "Other Level" if `i'  == 99
replace `i'_new  = "Not known" if `i'  == -1

encode `i'_new, g(`i'_en)
codebook `i'_en
 }

foreach i in  ilr_d_notionlev_v2_aim1 ilr_d_notionlev_v2_aim2 ilr_d_notionlev_v2_aim3
ilr_d_notionlev_v2_aim4 ilr_d_notionlev_v2_aim5 ilr_d_notionlev_v2_aim6
ilr_d_notionlev_v2_aim7 ilr_d_notionlev_v2_aim8 ilr_d_notionlev_v2_aim9
ilr_d_notionlev_v2_aim10 ilr_d_notionlev_v2_aim11  {

label var `i'_en "National NVQ level of learner Version 2"
         }

*ilr_notionalnvqlevel_aim*-- The level of the NVQ. Note levels 4 and 5 continue to reflect
their pre 2004 to --
codebook ilr_notionalnvqlevel_aim1 ilr_notionalnvqlevel_aim2 ilr_notionalnvqlevel_aim3
ilr_notionalnvqlevel_aim4 ilr_notionalnvqlevel_aim5 ilr_notionalnvqlevel_aim6
ilr_notionalnvqlevel_aim7 ilr_notionalnvqlevel_aim8 ilr_notionalnvqlevel_aim9
ilr_notionalnvqlevel_aim10 ilr_notionalnvqlevel_aim11

codebook ilr_notionalnvqlevel_aim12 ilr_notionalnvqlevel_aim13
ilr_notionalnvqlevel_aim14 ilr_notionalnvqlevel_aim15 ilr_notionalnvqlevel_aim16
```

```
ilr_notionalnvqlevel_aim17 ilr_notionalnvqlevel_aim18 ilr_notionalnvqlevel_aim19
ilr_notionalnvqlevel_aim20 // these are empty

*not needed- above ons are levels stored as strings -- they are used
foreach i in ilr_notionalnvqlevel_aim1 ilr_notionalnvqlevel_aim2 ilr_notionalnvqlevel_aim3
ilr_notionalnvqlevel_aim4 ilr_notionalnvqlevel_aim5 ilr_notionalnvqlevel_aim6
ilr_notionalnvqlevel_aim7 ilr_notionalnvqlevel_aim8 ilr_notionalnvqlevel_aim9
ilr_notionalnvqlevel_aim10 ilr_notionalnvqlevel_aim11 {
        encode `i', g(`i'_en)
        codebook `i'_en
 }

 //VARIABLES BELOW NOT ENCODED

*ilr_fundmodel_aim*-- funding model --
codebook ilr_fundmodel_aim1 ilr_fundmodel_aim2 ilr_fundmodel_aim3
ilr_fundmodel_aim4 ilr_fundmodel_aim5 ilr_fundmodel_aim6 ilr_fundmodel_aim7
ilr_fundmodel_aim8 ilr_fundmodel_aim9 ilr_fundmodel_aim10 ilr_fundmodel_aim11

codebook ilr_fundmodel_aim12 ilr_fundmodel_aim13 ilr_fundmodel_aim14
ilr_fundmodel_aim15 ilr_fundmodel_aim16 ilr_fundmodel_aim17 ilr_fundmodel_aim18
ilr_fundmodel_aim19 ilr_fundmodel_aim20 //these are al empty

gen ilr_fundmodel_aim1_new = ""
replace ilr_fundmodel_aim1_new = "Community Learning" if ilr_fundmodel_aim1== 10
replace ilr_fundmodel_aim1_new = "16-19 (excluding Apprenticeships)" if
ilr_fundmodel_aim1== 25
replace ilr_fundmodel_aim1_new = " Adult skills" if ilr_fundmodel_aim1== 35
replace ilr_fundmodel_aim1_new = "Apprenticeships (from 1 May 2017)" if
ilr_fundmodel_aim1== 36
replace ilr_fundmodel_aim1_new = "Skills Bootcamps" if ilr_fundmodel_aim1== 37
replace ilr_fundmodel_aim1_new = "ESF" if ilr_fundmodel_aim1== 70
replace ilr_fundmodel_aim1_new = "Other Adult" if ilr_fundmodel_aim1== 81
replace ilr_fundmodel_aim1_new = "Other 16-19" if ilr_fundmodel_aim1== 82
replace ilr_fundmodel_aim1_new = "Non-funded (No ESFA funding for this learning aim)"
if ilr_fundmodel_aim1== 99

encode ilr_fundmodel_aim1_new, g(ilr_fundmodel_aim1_en)
codebook ilr_fundmodel_aim1_en

foreach i in ilr_fundmodel_aim2 ilr_fundmodel_aim3 ilr_fundmodel_aim4
ilr_fundmodel_aim5 ilr_fundmodel_aim6 ilr_fundmodel_aim7 ilr_fundmodel_aim8
ilr_fundmodel_aim9 ilr_fundmodel_aim10 ilr_fundmodel_aim11 {

gen `i'_new = ""
replace `i'_new = "Community Learning" if `i'== 10
replace `i'_new = "16-19 (excluding Apprenticeships)" if `i'== 25
replace `i'_new = " Adult skills" if ilr_fundmodel_aim1== 35
replace `i'_new = "Apprenticeships (from 1 May 2017)" if `i'== 36
replace `i'_new = "Skills Bootcamps" if `i'== 37
```

```
replace `i'_new = "ESF" if `i'== 70
replace `i'_new = "Other Adult" if `i'== 81
replace `i'_new = "Other 16-19" if `i'== 82
replace `i'_new = "Non-funded (No ESFA funding for this learning aim)" if `i'== 99

encode `i'_new, g(`i'_en)
codebook `i'_en

}

foreach i in ilr_fundmodel_aim1 ilr_fundmodel_aim2 ilr_fundmodel_aim3
ilr_fundmodel_aim4 ilr_fundmodel_aim5 ilr_fundmodel_aim6 ilr_fundmodel_aim7
ilr_fundmodel_aim8 ilr_fundmodel_aim9 ilr_fundmodel_aim10 ilr_fundmodel_aim11 {
        label var `i'_en "Funding model"
}


*ilr_sof_aim*--  Source of funding --
codebook ilr_sof_aim1 ilr_sof_aim2 ilr_sof_aim3 ilr_sof_aim4 ilr_sof_aim5 ilr_sof_aim6
ilr_sof_aim7 ilr_sof_aim8 ilr_sof_aim9 ilr_sof_aim10 ilr_sof_aim11

codebook ilr_sof_aim12 ilr_sof_aim13 ilr_sof_aim14 ilr_sof_aim15 ilr_sof_aim16
ilr_sof_aim17 ilr_sof_aim18 ilr_sof_aim19 ilr_sof_aim20 // empty

gen ilr_sof_aim1_new = ""
replace ilr_sof_aim1_new = "Office for Students (OfS)" if ilr_sof_aim1 == 1
replace ilr_sof_aim1_new = "Education and Skills Funding Agency (ESFA) - Adult" if
ilr_sof_aim1 == 105
replace ilr_sof_aim1_new = "Education and Skills Funding Agency (ESFA) - 16-19" if
ilr_sof_aim1 == 107
replace ilr_sof_aim1_new = "Local authority (Community Learning funds)" if ilr_sof_aim1
== 108
replace ilr_sof_aim1_new = "Greater Manchester Combined Authority" if ilr_sof_aim1 ==
110
replace ilr_sof_aim1_new = "Liverpool City Region Combined Authority" if ilr_sof_aim1
== 111
replace ilr_sof_aim1_new = "West Midlands Combined Authority" if ilr_sof_aim1 == 112
replace ilr_sof_aim1_new = "West of England Combined Authority" if ilr_sof_aim1 == 113
replace ilr_sof_aim1_new = "Tees Valley Combined Authority" if ilr_sof_aim1 == 114
replace ilr_sof_aim1_new = "Cambridgeshire and Peterborough Combined Authority" if
ilr_sof_aim1 == 115
replace ilr_sof_aim1_new = "Greater London Authority" if ilr_sof_aim1 == 116
replace ilr_sof_aim1_new = "North of Tyne Combined Authority" if ilr_sof_aim1 == 117
replace ilr_sof_aim1_new = "Sheffield City Region Combined Authority" if ilr_sof_aim1 ==
118
replace ilr_sof_aim1_new = "West Yorkshire Combined Authority" if ilr_sof_aim1 == 119
replace ilr_sof_aim1_new = "Unassigned" if inlist(ilr_sof_aim1, 120,
121,122,123,124,125,126,127,128,129,130)
replace ilr_sof_aim1_new = "Other" if ilr_sof_aim1 == 998
```

```
replace ilr_sof_aim1_new = "None - No sources other than tuition fees" if ilr_sof_aim1 ==
999

encode ilr_sof_aim1_new, g(ilr_sof_aim1_en)
codebook ilr_sof_aim1_en

foreach i in ilr_sof_aim2 ilr_sof_aim3 ilr_sof_aim4 ilr_sof_aim5 ilr_sof_aim6 ilr_sof_aim7
ilr_sof_aim8 ilr_sof_aim9 ilr_sof_aim10 ilr_sof_aim11  {

        gen `i'_new = ""
replace `i'_new = "Office for Students (OfS)" if `i' == 1
replace `i'_new = "Education and Skills Funding Agency (ESFA) - Adult" if `i' == 105
replace `i'_new = "Education and Skills Funding Agency (ESFA) - 16-19" if `i' == 107
replace `i'_new = "Local authority (Community Learning funds)" if `i' == 108
replace `i'_new = "Greater Manchester Combined Authority" if `i' == 110
replace `i'_new = "Liverpool City Region Combined Authority" if `i' == 111
replace `i'_new = "West Midlands Combined Authority" if `i' == 112
replace `i'_new = "West of England Combined Authority" if `i' == 113
replace `i'_new = "Tees Valley Combined Authority" if `i' == 114
replace `i'_new = "Cambridgeshire and Peterborough Combined Authority" if `i' == 115
replace `i'_new = "Greater London Authority" if `i' == 116
replace `i'_new = "North of Tyne Combined Authority" if `i' == 117
replace `i'_new = "Sheffield City Region Combined Authority" if `i' == 118
replace `i'_new = "West Yorkshire Combined Authority" if `i' == 119
replace `i'_new = "Unassigned" if inlist(`i', 120,
121,122,123,124,125,126,127,128,129,130)
replace `i'_new = "Other" if `i' == 998
replace `i'_new = "None - No sources other than tuition fees" if `i' == 999

encode `i'_new, g(`i'_en)
codebook `i'_en

}

foreach i in ilr_sof_aim1 ilr_sof_aim2 ilr_sof_aim3 ilr_sof_aim4 ilr_sof_aim5 ilr_sof_aim6
ilr_sof_aim7 ilr_sof_aim8 ilr_sof_aim9 ilr_sof_aim10 ilr_sof_aim11  {
        label var `i'_en "Source of funding"

}

*ilr_learnstartdate_aim*-- date stored as string yyyy-mm-dd
codebook ilr_learnstartdate_aim1 ilr_learnstartdate_aim2 ilr_learnstartdate_aim3
ilr_learnstartdate_aim4 ilr_learnstartdate_aim5 ilr_learnstartdate_aim6
ilr_learnstartdate_aim7 ilr_learnstartdate_aim8 ilr_learnstartdate_aim9
ilr_learnstartdate_aim10 ilr_learnstartdate_aim11


foreach v in ilr_learnstartdate_aim1 ilr_learnstartdate_aim2 ilr_learnstartdate_aim3
ilr_learnstartdate_aim4 ilr_learnstartdate_aim5 ilr_learnstartdate_aim6
```

```
ilr_learnstartdate_aim7 ilr_learnstartdate_aim8 ilr_learnstartdate_aim9
ilr_learnstartdate_aim10 ilr_learnstartdate_aim11 {

* 1. Create a new numeric date variable
gen `v'_en = date(`v', "YMD")

* 2. Apply a date format so it's human-readable (e.g., 14jan2026)
format `v'_en %td
list `v' `v'_en in 1/5 if `v'_en !=.

}

foreach v in ilr_learnstartdate_aim1 ilr_learnstartdate_aim2 ilr_learnstartdate_aim3
ilr_learnstartdate_aim4 ilr_learnstartdate_aim5 ilr_learnstartdate_aim6
ilr_learnstartdate_aim7 ilr_learnstartdate_aim8 ilr_learnstartdate_aim9
ilr_learnstartdate_aim10 ilr_learnstartdate_aim11 {
        label var `v'_en "Learning start date"
}

*empty variables
codebook ilr_learnstartdate_aim12 ilr_learnstartdate_aim13 ilr_learnstartdate_aim14
ilr_learnstartdate_aim15 ilr_learnstartdate_aim16 ilr_learnstartdate_aim17
ilr_learnstartdate_aim18 ilr_learnstartdate_aim19 ilr_learnstartdate_aim20 //these are
empty


*ilr_learnplanenddate_aim*- stored as string yyyy-mm-dd
codebook ilr_learnplanenddate_aim1 ilr_learnplanenddate_aim2
ilr_learnplanenddate_aim3 ilr_learnplanenddate_aim4 ilr_learnplanenddate_aim5
ilr_learnplanenddate_aim6 ilr_learnplanenddate_aim7 ilr_learnplanenddate_aim8
ilr_learnplanenddate_aim9 ilr_learnplanenddate_aim10 ilr_learnplanenddate_aim11

foreach v in ilr_learnplanenddate_aim1 ilr_learnplanenddate_aim2
ilr_learnplanenddate_aim3 ilr_learnplanenddate_aim4 ilr_learnplanenddate_aim5
ilr_learnplanenddate_aim6 ilr_learnplanenddate_aim7 ilr_learnplanenddate_aim8
ilr_learnplanenddate_aim9 ilr_learnplanenddate_aim10 ilr_learnplanenddate_aim11 {

* 1. Create a new numeric date variable
gen `v'_en = date(`v', "YMD")

* 2. Apply a date format so it's human-readable (e.g., 14jan2026)
format `v'_en %td
list `v' `v'_en in 1/5 if `v'_en !=.

}

foreach v in ilr_learnplanenddate_aim1 ilr_learnplanenddate_aim2
ilr_learnplanenddate_aim3 ilr_learnplanenddate_aim4 ilr_learnplanenddate_aim5
ilr_learnplanenddate_aim6 ilr_learnplanenddate_aim7 ilr_learnplanenddate_aim8
ilr_learnplanenddate_aim9 ilr_learnplanenddate_aim10 ilr_learnplanenddate_aim11  {
```

```
	label var `v'_en "Learning end planned date"
}

*empty variables
codebook ilr_learnplanenddate_aim12 ilr_learnplanenddate_aim13
ilr_learnplanenddate_aim14 ilr_learnplanenddate_aim15 ilr_learnplanenddate_aim16
ilr_learnplanenddate_aim17 ilr_learnplanenddate_aim18 ilr_learnplanenddate_aim19
ilr_learnplanenddate_aim20 // these are empty

*ilr_learnactenddate_aim*-- stored as string
codebook ilr_learnactenddate_aim1 ilr_learnactenddate_aim2 ilr_learnactenddate_aim3
ilr_learnactenddate_aim4 ilr_learnactenddate_aim5 ilr_learnactenddate_aim6
ilr_learnactenddate_aim7 ilr_learnactenddate_aim8 ilr_learnactenddate_aim9
ilr_learnactenddate_aim10 ilr_learnactenddate_aim11

foreach v in ilr_learnactenddate_aim1 ilr_learnactenddate_aim2
ilr_learnactenddate_aim3 ilr_learnactenddate_aim4 ilr_learnactenddate_aim5
ilr_learnactenddate_aim6 ilr_learnactenddate_aim7 ilr_learnactenddate_aim8
ilr_learnactenddate_aim9 ilr_learnactenddate_aim10 ilr_learnactenddate_aim11  {

* 1. Create a new numeric date variable
gen `v'_en = date(`v', "YMD")

* 2. Apply a date format so it's human-readable (e.g., 14jan2026)
format `v'_en %td
list `v' `v'_en in 1/5 if `v'_en !=.

}

foreach v in ilr_learnactenddate_aim1 ilr_learnactenddate_aim2
ilr_learnactenddate_aim3 ilr_learnactenddate_aim4 ilr_learnactenddate_aim5
ilr_learnactenddate_aim6 ilr_learnactenddate_aim7 ilr_learnactenddate_aim8
ilr_learnactenddate_aim9 ilr_learnactenddate_aim10 ilr_learnactenddate_aim11  {
	label var `v'_en "Learning actual end date"
}

*empty variables
codebook ilr_learnactenddate_aim12 ilr_learnactenddate_aim13
ilr_learnactenddate_aim14 ilr_learnactenddate_aim15 ilr_learnactenddate_aim16
ilr_learnactenddate_aim17 ilr_learnactenddate_aim18 ilr_learnactenddate_aim19
ilr_learnactenddate_aim20 // empty


*ilr_guidedlearninghours_aim*-- continuous variable, not coded as per ILR multiply data
fields
codebook ilr_guidedlearninghours_aim1 ilr_guidedlearninghours_aim2
ilr_guidedlearninghours_aim3 ilr_guidedlearninghours_aim4
ilr_guidedlearninghours_aim5 ilr_guidedlearninghours_aim6
ilr_guidedlearninghours_aim7 ilr_guidedlearninghours_aim8
```

```
codebook ilr_guidedlearninghours_aim9 ilr_guidedlearninghours_aim10
ilr_guidedlearninghours_aim11 ilr_guidedlearninghours_aim12
ilr_guidedlearninghours_aim13 ilr_guidedlearninghours_aim14
ilr_guidedlearninghours_aim15 ilr_guidedlearninghours_aim16
ilr_guidedlearninghours_aim17 ilr_guidedlearninghours_aim18
ilr_guidedlearninghours_aim19 ilr_guidedlearninghours_aim20 // empty

*ilr_compstatus_aim*- completion status
codebook ilr_compstatus_aim1 ilr_compstatus_aim2 ilr_compstatus_aim3
ilr_compstatus_aim4 ilr_compstatus_aim5 ilr_compstatus_aim6 ilr_compstatus_aim7
ilr_compstatus_aim8 ilr_compstatus_aim9 ilr_compstatus_aim10 ilr_compstatus_aim11

codebook ilr_compstatus_aim12 ilr_compstatus_aim13 ilr_compstatus_aim14
ilr_compstatus_aim15 ilr_compstatus_aim16 ilr_compstatus_aim17
ilr_compstatus_aim18 ilr_compstatus_aim19 ilr_compstatus_aim20 //empty

*recoding
foreach v in ilr_compstatus_aim1 ilr_compstatus_aim2 ilr_compstatus_aim3
ilr_compstatus_aim4 ilr_compstatus_aim5 ilr_compstatus_aim6 ilr_compstatus_aim7
ilr_compstatus_aim8 ilr_compstatus_aim9 ilr_compstatus_aim10 ilr_compstatus_aim11 {

        gen `v'_new = ""
        replace `v'_new = "The learner is continuing or intending to continue the learning
activities leading to the learning aim" if `v' == 1
        replace `v'_new = "The learner has completed the learning activities leading to the
learning aim" if `v' == 2
        replace `v'_new = "The learner has withdrawn from the learning activities leading
to the learning aim" if `v' == 3
        replace `v'_new = "The learner has transferred to a new learning aim" if `v' == 4
        replace `v'_new = "Learner has temporarily withdrawn from the aim due to an
agreed break in learning" if `v' == 6

        encode `v'_new, g(`v'_en)
codebook `v'_en
}

*labeling
foreach v in ilr_compstatus_aim1 ilr_compstatus_aim2 ilr_compstatus_aim3
ilr_compstatus_aim4 ilr_compstatus_aim5 ilr_compstatus_aim6 ilr_compstatus_aim7
ilr_compstatus_aim8 ilr_compstatus_aim9 ilr_compstatus_aim10 ilr_compstatus_aim11 {
        label var `v'_en "completion status"
}


*ilr_outcome_aim*--
codebook ilr_outcome_aim1 ilr_outcome_aim2 ilr_outcome_aim3 ilr_outcome_aim4
ilr_outcome_aim5 ilr_outcome_aim6 ilr_outcome_aim7 ilr_outcome_aim8
ilr_outcome_aim9 ilr_outcome_aim10 ilr_outcome_aim11
```

```
codebook ilr_outcome_aim12 ilr_outcome_aim13 ilr_outcome_aim14 ilr_outcome_aim15
ilr_outcome_aim16 ilr_outcome_aim17 ilr_outcome_aim18 ilr_outcome_aim19
ilr_outcome_aim20 // empty

*recoding
foreach v in ilr_outcome_aim1 ilr_outcome_aim2 ilr_outcome_aim3 ilr_outcome_aim4
ilr_outcome_aim5 ilr_outcome_aim6 ilr_outcome_aim7 ilr_outcome_aim8
ilr_outcome_aim9 ilr_outcome_aim10 ilr_outcome_aim11 {

        gen `v'_new = ""
        replace `v'_new = "Achieved" if `v' == 1
        replace `v'_new = "Partial Achievement" if `v' == 2
        replace `v'_new = "No achievement" if `v' == 3
        replace `v'_new = "Learning activities are complete but the outcome is not yet
known" if `v' == 8
        replace `v'_new = "Study Continuing" if `v' == 9

        encode `v'_new, g(`v'_en)
codebook `v'_en
}

*labeling
foreach v in ilr_outcome_aim1 ilr_outcome_aim2 ilr_outcome_aim3 ilr_outcome_aim4
ilr_outcome_aim5 ilr_outcome_aim6 ilr_outcome_aim7 ilr_outcome_aim8
ilr_outcome_aim9 ilr_outcome_aim10 ilr_outcome_aim11 {
        label var `v'_en "Outcome"
}


*ilr_outgrade_aim*-- outcome grade (refer to sheet outgrade)
codebook ilr_outgrade_aim1 ilr_outgrade_aim2 ilr_outgrade_aim3 ilr_outgrade_aim4
ilr_outgrade_aim5 ilr_outgrade_aim6 ilr_outgrade_aim7 ilr_outgrade_aim8
ilr_outgrade_aim9 ilr_outgrade_aim10 ilr_outgrade_aim11

codebook ilr_outgrade_aim12 ilr_outgrade_aim13 ilr_outgrade_aim14
ilr_outgrade_aim15 ilr_outgrade_aim16 ilr_outgrade_aim17 ilr_outgrade_aim18
ilr_outgrade_aim19 ilr_outgrade_aim20 // empty

foreach v in ilr_outgrade_aim1 ilr_outgrade_aim2 ilr_outgrade_aim3 ilr_outgrade_aim4
ilr_outgrade_aim5 ilr_outgrade_aim6 ilr_outgrade_aim7 ilr_outgrade_aim8
ilr_outgrade_aim9 ilr_outgrade_aim10 ilr_outgrade_aim11 {

        gen `v'_new = ""
        replace `v'_new = "Achievement at entry level 1" if `v' == "EL1"
        replace `v'_new = "Achievement at entry level 2" if `v' == "EL2"
        replace `v'_new = "Fail" if `v' == "FL"
        replace `v'_new = "Pass" if `v' == "PA"

        encode `v'_new, g(`v'_en)
codebook `v'_en
```

```
}

foreach v in ilr_outgrade_aim1 ilr_outgrade_aim2 ilr_outgrade_aim3 ilr_outgrade_aim4
ilr_outgrade_aim5 ilr_outgrade_aim6 ilr_outgrade_aim7 ilr_outgrade_aim8
ilr_outgrade_aim9 ilr_outgrade_aim10 ilr_outgrade_aim11 {
        label var `v'_en "Outgrade"
}

*ilr_achdate_aim-- date in string format
codebook ilr_achdate_aim1 ilr_achdate_aim4

codebook ilr_achdate_aim2 ilr_achdate_aim3 ilr_achdate_aim5 ilr_achdate_aim6
ilr_achdate_aim7 ilr_achdate_aim8 ilr_achdate_aim9 ilr_achdate_aim10
ilr_achdate_aim11 ilr_achdate_aim12 ilr_achdate_aim13 ilr_achdate_aim14
ilr_achdate_aim15 ilr_achdate_aim16 ilr_achdate_aim17 ilr_achdate_aim18
ilr_achdate_aim19 ilr_achdate_aim20 // empty

foreach v in  ilr_achdate_aim1  ilr_achdate_aim4  {

* 1. Create a new numeric date variable
gen `v'_en = date(`v', "YMD")

* 2. Apply a date format so it's human-readable (e.g., 14jan2026)
format `v'_en %td
list `v' `v'_en in 1/5 if `v'_en !=.

}

foreach v in ilr_achdate_aim1 ilr_achdate_aim4 {
        label var `v'_en "Achievement date"
}


*ilr_withdrawreason_aim*
codebook ilr_withdrawreason_aim1 ilr_withdrawreason_aim2 ilr_withdrawreason_aim3
ilr_withdrawreason_aim4 ilr_withdrawreason_aim5 ilr_withdrawreason_aim6

codebook ilr_withdrawreason_aim7 ilr_withdrawreason_aim8 ilr_withdrawreason_aim9
ilr_withdrawreason_aim10 ilr_withdrawreason_aim11 ilr_withdrawreason_aim12
ilr_withdrawreason_aim13 ilr_withdrawreason_aim14 ilr_withdrawreason_aim15
ilr_withdrawreason_aim16 ilr_withdrawreason_aim17 ilr_withdrawreason_aim18
ilr_withdrawreason_aim19 ilr_withdrawreason_aim20 // empty


* 1) Define (or update) a shared value label once
cap label drop ilr_withdraw
label define ilr_withdraw                       ///
    0  "Not withdrawn"                          ///
    2  "Learner has transferred to another provider" ///
    3  "Learner Injury / Illness"               ///
```

```
    7  "Transferred between providers (ESFA intervention/agreement)" ///
    28 "OLASS learner withdrawn: circumstances outside provider's control" ///
    29 "Learner has been made redundant"           ///
    40 "Transferred to a new learning aim with same provider" ///
    41 "Transferred to another provider: specific government strategy" ///
    42 "Academic failure/left in bad standing/not permitted to progress – HE only" ///
    43 "Financial reasons"                        ///
    44 "Other personal reasons"                   ///
    45 "Written off after lapse of time – HE only" ///
    46 "Exclusion"                                ///
    47 "Transferred to another provider due to merger" ///
    48 "Industry placement: withdrawn due to circumstances outside provider's control" ///
    97 "Other"                                    ///
    98 "Reason not known", replace

* 2) Apply the label to all available aim variables
foreach v in ilr_withdrawreason_aim1 ilr_withdrawreason_aim2 ilr_withdrawreason_aim3
///
        ilr_withdrawreason_aim4 ilr_withdrawreason_aim5 ilr_withdrawreason_aim6 {
    label values `v' ilr_withdraw
    label var `v' "Withdraw reason (coded): `v'"
}

* Optional: quickly inspect each
foreach v in ilr_withdrawreason_aim1 ilr_withdrawreason_aim2 ilr_withdrawreason_aim3
///
        ilr_withdrawreason_aim4 ilr_withdrawreason_aim5 ilr_withdrawreason_aim6 {
    codebook `v'
}


*ilr_LDM_aim*-- Learning Delivery Monitoring-- cant find description in ILR fields file--
codebook ilr_LDM_aim1 ilr_LDM_aim2 ilr_LDM_aim3 ilr_LDM_aim4 ilr_LDM_aim5
ilr_LDM_aim6 ilr_LDM_aim7  ilr_LDM_aim10 ilr_LDM_aim11

codebook ilr_LDM_aim8 ilr_LDM_aim9 ilr_LDM_aim12 ilr_LDM_aim13 ilr_LDM_aim14
ilr_LDM_aim15 ilr_LDM_aim16 ilr_LDM_aim17 ilr_LDM_aim18 ilr_LDM_aim19
ilr_LDM_aim20 // empty

*ilr_legalorgtype_aim* -- provider type-- Not Applicable. Text field - "PBGS, ULEA, UGFE,
USDC, etc."
codebook ilr_legalorgtype_aim1 ilr_legalorgtype_aim2 ilr_legalorgtype_aim3
ilr_legalorgtype_aim4 ilr_legalorgtype_aim5 ilr_legalorgtype_aim6 ilr_legalorgtype_aim7
ilr_legalorgtype_aim8 ilr_legalorgtype_aim9 ilr_legalorgtype_aim10
ilr_legalorgtype_aim11

codebook ilr_legalorgtype_aim12 ilr_legalorgtype_aim13 ilr_legalorgtype_aim14
ilr_legalorgtype_aim15 ilr_legalorgtype_aim16 ilr_legalorgtype_aim17
ilr_legalorgtype_aim18 ilr_legalorgtype_aim19 ilr_legalorgtype_aim20 //empty
```

```
foreach v in ilr_legalorgtype_aim1 ilr_legalorgtype_aim2 ilr_legalorgtype_aim3
ilr_legalorgtype_aim4 ilr_legalorgtype_aim5 ilr_legalorgtype_aim6 ilr_legalorgtype_aim7
ilr_legalorgtype_aim8 ilr_legalorgtype_aim9 ilr_legalorgtype_aim10
ilr_legalorgtype_aim11 {

        encode `v', gen (`v'_en)
        codebook `v'_en
}

*ilr_d_secsubjareatier1_aim* -- Tier1 classification of the subject of a learning aim --
codebook ilr_d_secsubjareatier1_aim1 ilr_d_secsubjareatier1_aim2
ilr_d_secsubjareatier1_aim3 ilr_d_secsubjareatier1_aim4 ilr_d_secsubjareatier1_aim5
ilr_d_secsubjareatier1_aim6 ilr_d_secsubjareatier1_aim7 ilr_d_secsubjareatier1_aim8
ilr_d_secsubjareatier1_aim9 ilr_d_secsubjareatier1_aim10 ilr_d_secsubjareatier1_aim11

codebook ilr_d_secsubjareatier1_aim12 ilr_d_secsubjareatier1_aim13
ilr_d_secsubjareatier1_aim14 ilr_d_secsubjareatier1_aim15
ilr_d_secsubjareatier1_aim16 ilr_d_secsubjareatier1_aim17
ilr_d_secsubjareatier1_aim18 ilr_d_secsubjareatier1_aim19
ilr_d_secsubjareatier1_aim20 // empty

* 1) Define (or update) a shared value label once
foreach v in ilr_d_secsubjareatier1_aim1 ilr_d_secsubjareatier1_aim2
ilr_d_secsubjareatier1_aim3 ilr_d_secsubjareatier1_aim4 ilr_d_secsubjareatier1_aim5
ilr_d_secsubjareatier1_aim6 ilr_d_secsubjareatier1_aim7 ilr_d_secsubjareatier1_aim8
ilr_d_secsubjareatier1_aim9 ilr_d_secsubjareatier1_aim10 ilr_d_secsubjareatier1_aim11
{

    gen `v'_new = ""
    replace `v'_new = "Health, Public Services and Care" if `v' == "1"
    replace `v'_new = "Science and Mathematics" if `v' == "2"
    replace `v'_new = "Agriculture, Horticulture and Animal Care" if `v' == "3"
    replace `v'_new = "Engineering and Manufacturing Technologies" if `v' == "4"
    replace `v'_new = "Construction, Planning and the Built Environment" if `v' == "5"
    replace `v'_new = "Information and Communication Technology" if `v' == "6"
    replace `v'_new = "Retail and Commercial Enterprise" if `v' == "7"
    replace `v'_new = "Leisure, Travel and Tourism" if `v' == "8"
    replace `v'_new = "Arts, Media and Publishing" if `v' == "9"
    replace `v'_new = "History, Philosophy and Theology" if `v' == "10"
    replace `v'_new = "Social Sciences" if `v' == "11"
    replace `v'_new = "Languages, Literature and Culture" if `v' == "12"
    replace `v'_new = "Education and Training" if `v' == "13"
    replace `v'_new = "Preparation for Life and Work" if `v' == "14"
    replace `v'_new = "Business, Administration and Law" if `v' == "15"
    replace `v'_new = "Unknown" if `v' == "U"
    replace `v'_new = "Not Applicable" if `v' == "NA"

    encode `v'_new, g(`v'_en)
    codebook `v'_en
}
```

```
* 2) Apply the label to all available aim variables
foreach v in ilr_d_secsubjareatier1_aim1 ilr_d_secsubjareatier1_aim2
ilr_d_secsubjareatier1_aim3 ilr_d_secsubjareatier1_aim4 ilr_d_secsubjareatier1_aim5
ilr_d_secsubjareatier1_aim6 ilr_d_secsubjareatier1_aim7 ilr_d_secsubjareatier1_aim8
ilr_d_secsubjareatier1_aim9 ilr_d_secsubjareatier1_aim10 ilr_d_secsubjareatier1_aim11
{

    label var `v'_en "The learning aims broad (Tier 1) classification: `v'"
}

* Optional: quickly inspect each
foreach v in ilr_d_secsubjareatier1_aim1 ilr_d_secsubjareatier1_aim2
ilr_d_secsubjareatier1_aim3 ilr_d_secsubjareatier1_aim4 ilr_d_secsubjareatier1_aim5
ilr_d_secsubjareatier1_aim6 ilr_d_secsubjareatier1_aim7 ilr_d_secsubjareatier1_aim8
ilr_d_secsubjareatier1_aim9 ilr_d_secsubjareatier1_aim10 ilr_d_secsubjareatier1_aim11
{
    codebook `v'_en
}

*ilr_d_secsubjareatier2_aim*--
label var ilr_d_secsubjareatier2_aim20 "The learning aims more specialised classification
(Tier 2) of the subject of a learning aim"

codebook ilr_d_secsubjareatier2_aim1 ilr_d_secsubjareatier2_aim2
ilr_d_secsubjareatier2_aim3 ilr_d_secsubjareatier2_aim4 ilr_d_secsubjareatier2_aim5
ilr_d_secsubjareatier2_aim6 ilr_d_secsubjareatier2_aim7 ilr_d_secsubjareatier2_aim8
ilr_d_secsubjareatier2_aim9 ilr_d_secsubjareatier2_aim10 ilr_d_secsubjareatier2_aim11

codebook ilr_d_secsubjareatier2_aim12 ilr_d_secsubjareatier2_aim13
ilr_d_secsubjareatier2_aim14 ilr_d_secsubjareatier2_aim15
ilr_d_secsubjareatier2_aim16 ilr_d_secsubjareatier2_aim17
ilr_d_secsubjareatier2_aim18 ilr_d_secsubjareatier2_aim19
ilr_d_secsubjareatier2_aim20 // empty

*coding
foreach v in ilr_d_secsubjareatier2_aim1 ilr_d_secsubjareatier2_aim2
ilr_d_secsubjareatier2_aim3 ilr_d_secsubjareatier2_aim4 ilr_d_secsubjareatier2_aim5
ilr_d_secsubjareatier2_aim6 ilr_d_secsubjareatier2_aim7 ilr_d_secsubjareatier2_aim8
ilr_d_secsubjareatier2_aim9 ilr_d_secsubjareatier2_aim10 ilr_d_secsubjareatier2_aim11
{

    gen `v'_new = ""

    replace `v'_new = "Health, Public Services and Care" if `v' == "01"
    replace `v'_new = "Medicine and Dentistry" if `v' == "01.1"
    replace `v'_new = "Nursing and Subjects and Vocations Allied to Medicine" if `v' ==
"01.2"
    replace `v'_new = "Health and Social Care" if `v' == "01.3"
    replace `v'_new = "Public Services" if `v' == "01.4"
```

```
replace `v'_new = "Child Development and Well Being" if `v' == "01.5"

replace `v'_new = "Science and Mathematics" if `v' == "02"
replace `v'_new = "Science" if `v' == "02.1"
replace `v'_new = "Mathematics and Statistics" if `v' == "02.2"

replace `v'_new = "Agriculture, Horticulture and Animal Care" if `v' == "03"
replace `v'_new = "Agriculture" if `v' == "03.1"
replace `v'_new = "Horticulture and Forestry" if `v' == "03.2"
replace `v'_new = "Animal Care and Veterinary Science" if `v' == "03.3"
replace `v'_new = "Environmental Conservation" if `v' == "03.4"

replace `v'_new = "Engineering and Manufacturing Technologies" if `v' == "04"
replace `v'_new = "Engineering" if `v' == "04.1"
replace `v'_new = "Manufacturing Technologies" if `v' == "04.2"
replace `v'_new = "Transportation Operations and Maintenance" if `v' == "04.3"

replace `v'_new = "Construction, Planning and the Built Environment" if `v' == "05"
replace `v'_new = "Architecture" if `v' == "05.1"
replace `v'_new = "Building and Construction" if `v' == "05.2"
replace `v'_new = "Urban, Rural and Regional Planning" if `v' == "05.3"

replace `v'_new = "Information and Communication Technology" if `v' == "06"
replace `v'_new = "ICT Practitioners" if `v' == "06.1"
replace `v'_new = "ICT for Users" if `v' == "06.2"

replace `v'_new = "Retail and Commercial Enterprise" if `v' == "07"
replace `v'_new = "Retailing and Wholesaling" if `v' == "07.1"
replace `v'_new = "Warehousing and Distribution" if `v' == "07.2"
replace `v'_new = "Service Enterprises" if `v' == "07.3"
replace `v'_new = "Hospitality and Catering" if `v' == "07.4"

replace `v'_new = "Leisure, Travel and Tourism" if `v' == "08"
replace `v'_new = "Sport, Leisure and Recreation" if `v' == "08.1"
replace `v'_new = "Travel and Tourism" if `v' == "08.2"

replace `v'_new = "Arts, Media and Publishing" if `v' == "09"
replace `v'_new = "Performing Arts" if `v' == "09.1"
replace `v'_new = "Crafts, Creative Arts and Design" if `v' == "09.2"
replace `v'_new = "Media and Communication" if `v' == "09.3"
replace `v'_new = "Publishing and Information Services" if `v' == "09.4"

replace `v'_new = "History, Philosophy and Theology" if `v' == "10"
replace `v'_new = "History" if `v' == "10.1"
replace `v'_new = "Archaeology and Archaeological Sciences" if `v' == "10.2"
replace `v'_new = "Philosophy" if `v' == "10.3"
replace `v'_new = "Theology and Religious Studies" if `v' == "10.4"

replace `v'_new = "Social Sciences" if `v' == "11"
replace `v'_new = "Geography" if `v' == "11.1"
```

```
    replace `v'_new = "Sociology and Social Policy" if `v' == "11.2"
    replace `v'_new = "Politics" if `v' == "11.3"
    replace `v'_new = "Economics" if `v' == "11.4"
    replace `v'_new = "Anthropology" if `v' == "11.5"

    replace `v'_new = "Languages, Literature and Culture" if `v' == "12"
    replace `v'_new = "Languages, Literature and Culture of the British Isles" if `v' ==
"12.1"
    replace `v'_new = "Other Languages, Literature and Culture" if `v' == "12.2"
    replace `v'_new = "Linguistics" if `v' == "12.3"

    replace `v'_new = "Education and Training" if `v' == "13"
    replace `v'_new = "Teaching and Lecturing" if `v' == "13.1"
    replace `v'_new = "Direct Learning Support" if `v' == "13.2"

    replace `v'_new = "Preparation for Life and Work" if `v' == "14"
    replace `v'_new = "Foundations for Learning and Life" if `v' == "14.1"
    replace `v'_new = "Preparation for Work" if `v' == "14.2"

    replace `v'_new = "Business, Administration and Law" if `v' == "15"
    replace `v'_new = "Accounting and Finance" if `v' == "15.1"
    replace `v'_new = "Administration" if `v' == "15.2"
    replace `v'_new = "Business Management" if `v' == "15.3"
    replace `v'_new = "Marketing and Sales" if `v' == "15.4"
    replace `v'_new = "Law and Legal Services" if `v' == "15.5"

    replace `v'_new = "Unknown" if `v' == "U"
    replace `v'_new = "Not Applicable" if `v' == "NA"

    encode `v'_new, gen(`v'_en)
}

* 2) Apply the label to all available aim variables
foreach v in ilr_d_secsubjareatier2_aim1 ilr_d_secsubjareatier2_aim2
ilr_d_secsubjareatier2_aim3 ilr_d_secsubjareatier2_aim4 ilr_d_secsubjareatier2_aim5
ilr_d_secsubjareatier2_aim6 ilr_d_secsubjareatier2_aim7 ilr_d_secsubjareatier2_aim8
ilr_d_secsubjareatier2_aim9 ilr_d_secsubjareatier2_aim10 ilr_d_secsubjareatier2_aim11
{

    label var `v'_en "The learning aims more specialised classification (Tier 2) of the
subject of a learning aim"
}

* Optional: quickly inspect each
foreach v in ilr_d_secsubjareatier2_aim1 ilr_d_secsubjareatier2_aim2
ilr_d_secsubjareatier2_aim3 ilr_d_secsubjareatier2_aim4 ilr_d_secsubjareatier2_aim5
ilr_d_secsubjareatier2_aim6 ilr_d_secsubjareatier2_aim7 ilr_d_secsubjareatier2_aim8
ilr_d_secsubjareatier2_aim9 ilr_d_secsubjareatier2_aim10 ilr_d_secsubjareatier2_aim11
{
    codebook `v'_en
```

```
}

*ilr_d_regaim_aim* -- no description found
codebook ilr_d_regaim_aim6 ilr_d_regaim_aim7 ilr_d_regaim_aim8 ilr_d_regaim_aim9
ilr_d_regaim_aim10 ilr_d_regaim_aim11

codebook ilr_d_regaim_aim12 ilr_d_regaim_aim13 ilr_d_regaim_aim14
ilr_d_regaim_aim15 ilr_d_regaim_aim16 ilr_d_regaim_aim17 ilr_d_regaim_aim18
ilr_d_regaim_aim19 ilr_d_regaim_aim20 // empty

*ilr_priorlevel_aim* learner prior level achieved
codebook ilr_priorlevel_aim6 ilr_priorlevel_aim7 ilr_priorlevel_aim8 ilr_priorlevel_aim9
ilr_priorlevel_aim10 ilr_priorlevel_aim11

codebook ilr_priorlevel_aim12 ilr_priorlevel_aim13 ilr_priorlevel_aim14
ilr_priorlevel_aim15 ilr_priorlevel_aim16 ilr_priorlevel_aim17 ilr_priorlevel_aim18
ilr_priorlevel_aim19 ilr_priorlevel_aim20 //empty

* 1) Define the label once
cap label drop ilr_priorlevel
label define ilr_priorlevel ///
    -1 "Not applicable/Not Known" ///
     1 "Entry Level" ///
     2 "Level 1" ///
     3 "Level 2" ///
     4 "Full Level 2" ///
     5 "Level 3" ///
     6 "Full Level 3" ///
     7 "Level 4" ///
     8 "Level 5" ///
     9 "Level 6" ///
    10 "Level 7 and above" ///
    97 "Other qualification, level not known" ///
    98 "Not known" ///
    99 "No qualifications", replace

* 2) Apply to all prior level variables
foreach v in ilr_priorlevel_aim6 ilr_priorlevel_aim7 ilr_priorlevel_aim8 ///
          ilr_priorlevel_aim9 ilr_priorlevel_aim10 ilr_priorlevel_aim11 ///
           {
    label values `v' ilr_priorlevel
    label var `v' "Learner prior level achieved: `v'"
}

foreach v in ilr_priorlevel_aim6 ilr_priorlevel_aim7 ilr_priorlevel_aim8 ///
          ilr_priorlevel_aim9 ilr_priorlevel_aim10 ilr_priorlevel_aim11 ///
           {
codebook `v'
                          }
```

```
*ilr_empstat* - all employment status recoded and labeled
codebook ilr_empstat1_en ilr_empstat2_en ilr_empstat3_en ilr_empstat4_en

*ilr_dateempstatapp* -- date employment status applies-- date stored as string
codebook ilr_dateempstatapp1 ilr_dateempstatapp2 ilr_dateempstatapp3
ilr_dateempstatapp4

foreach v in ilr_dateempstatapp1 ilr_dateempstatapp2 ilr_dateempstatapp3
ilr_dateempstatapp4  {

* 1. Create a new numeric date variable
gen `v'_en = date(`v', "YMD")

* 2. Apply a date format so it's human-readable (e.g., 14jan2026)
format `v'_en %td
list `v' `v'_en in 1/5 if `v'_en !=.

}

foreach v in ilr_dateempstatapp1 ilr_dateempstatapp2 ilr_dateempstatapp3
ilr_dateempstatapp4 {
        label var `v'_en "The date on which the employment status applies."
        codebook `v'_en
}


*ilr_match_type---  Type of match with ILR dataset (unmatched, direct or fuzzy)
codebook ilr_match_type
encode ilr_match_type, g(ilr_match_type_en)

//labellign variables
label var ilr_empstatdl_en "Learner employment status on first day of learning"
label var svy_bs_qnumconf_aq2_new "And how confident do you feel about doing maths
related tasks-baseline"
label var svy_bs_qnumconf_bq2_new "And how confident do you feel about doing maths
related tasks-baseline"
label var svy_bs_qnumconf_cq2_new "And how confident do you feel about doing maths
related tasks-baseline"
label var svy_bs_qnumconf_dq2_new "And how confident do you feel about doing maths
related tasks-baseline"
label var svy_bs_qnumconf_eq2_new "And how confident do you feel about doing maths
related tasks-baseline"
label var svy_bs_qnumconf_fq2_new "And how confident do you feel about doing maths
related tasks-baseline"

label var svy_end_fn_qnumconf_aq2_new "And how confident do you feel about doing
maths related tasks-endline"
label var svy_end_fn_qnumconf_bq2_new "And how confident do you feel about doing
maths related tasks-endline"
```

```
label var svy_end_fn_qnumconf_cq2_new "And how confident do you feel about doing maths related tasks-endline"
label var svy_end_fn_qnumconf_dq2_new "And how confident do you feel about doing maths related tasks-endline"
label var svy_end_fn_qnumconf_eq2_new "And how confident do you feel about doing maths related tasks-endline"
label var svy_end_fn_qnumconf_fq2_new "And how confident do you feel about doing maths related tasks-endline"

label var svy_bs_qcare_en "Do you look after or provider care to someone because they have log term health condition?"
label var age_cat "Age-categories"
label var ilr_empstat1_en"Employment status"
label var ilr_empstat2_en"Employment status"
label var ilr_empstat3_en"Employment status"
label var ilr_empstat4_en"Employment status"
label var merged_ethnicity_cat "merged ethnicity categories"
label var svy_end_fn_qgender_en "gender at endline"
label var svy_bs_qgender_en "gender at basleine"

//////////////////////child data//////////////////////////////
*Child scores are receievd by the schools-- these are cleaned and coded in SECTION 3-Impact Evlauation--
codebook chd_childmathsattainment2324 chd_childmathsattainment2425 chd_childmathsattainmentopen232 chd_childmathsattainmentopen242

////////////////////////////////////SECTION 1: CLEANING ENDS////////////////////////////////////////////////
*school name
replace schoolname = subinstr(schoolname, " ", "", .)

////////////////////////////////////SECTION 2: MERGING DATASETS////////////////////////////////////////////////
//saving clean data as .dta
save "$cleandata\clean_familynumeracy_20251126_withrepeatflags_to_share.dta", replace

////////////////////////////////////////////////////////////////////////////////////////////////////////////
*MERGE With IMD decile by postcodes
//////////////////////////////////////////////////
use "$cleandata\clean_familynumeracy_20251126_withrepeatflags_to_share.dta", clear

*keep only eligible and remove repetitions
*drop if sample == 0 //167 dropped
*drop if repeat_flag == 1 //0 dropped
ta treat //588-  this includes  repeats and ineligibles- marked to identifying
ta eligibility_ies
ta repeat_flag

*merging current postocdes ILR var with postcodes var
codebook ilr_l_currentpcode postcode //no missing in postcode
replace ilr_l_currentpcode = postcode if ilr_l_currentpcode == ""
```

```
*remove extra spacing in currentpostcodes
replace ilr_l_currentpcode = upper(subinstr(ilr_l_currentpcode, " ", "", .))
codebook ilr_l_currentpcode //quick check -- no missing

*merge using postcodes IMD mapping file
merge m:1 ilr_l_currentpcode using "$cleandata/merge_postcode_lsoa21_imd.dta",
keep(master match) generate(merge_1)

codebook merge_1

codebook ilr_l_currentpcode //keeping these as string for merging purpose

codebook ilr_l_currentpcode if merge_1 == 1 //all matched-- these are not encoded as
string variable allowed merging and coding

*checking imd deciles and ranks
codebook imd_rank // Index of Multiple Deprivation (IMD) Rank (where 1 is most
deprived)

codebook imd_decile //Index of Multiple Deprivation (IMD) Decile (where 1 is most
deprived 10% of LSOA)

//saving clean data as .dta
save "$cleandata\clean_familynumeracy_20251126_withrepeatflags_to_share.dta",
replace

//merging with lsoa names and region mapping file for region
use "$cleandata\clean_familynumeracy_20251126_withrepeatflags_to_share.dta", clear
merge m:1 lsoaname21 using "$cleandata\lsoa_region_mapping.dta", keep(master
match)generate(merge_2) //keep lsoaname21 BUA22NM LAD22NM RGN22NM

//saving clean data as .dta
save "$cleandata\clean_familynumeracy_20251126_withrepeatflags_to_share.dta",
replace

////////////////////////////////////////////////////////////////////////////////////////
//////////////////////SECTION 3: IMPACT EVALUATION- VARIABLES////////////////////////////////

use "$cleandata\clean_familynumeracy_20251126_withrepeatflags_to_share.dta", clear

//DATA2: saving clean data with eligibles only and repeat flags
keep if eligibility_ies == 1

save "$cleandata\clean_familynumeracy_20251126_eligibles-
withrepeatflags_to_share.dta", replace //435 with 14 duplicates and 421 unique

//identified duplicate IDS- checking if these are added twice in the data
```

```
ta group if uniquelearnerid ==
"9ec7d047fd7e1b9b8976576f448bc9c37d315b0302161d1003817cd19c859346"
ta group if uniquelearnerid ==
"796b18a971be16bbb720884b21d3789ecfbe0c1b08a1911b5bf101a278dbe6c0"
ta group if uniquelearnerid ==
"a9ed99b4b7028e2e187a58b6471035d946e96ae6086519ae80de66aed51635bc"
ta group if uniquelearnerid ==
"0305305d24db3532e3624f0dbe1aa6a138dcf75c2145105fed36201b6dc20730"
ta group if uniquelearnerid ==
"30cda94f012c47c799c89e07e63c19df7333d812d17db092452a39f98e537525"
ta group if uniquelearnerid ==
"62c4a79fe9e1a8119eaa9513630d6b3bcee998d3e72d560696610649b00465fe"
ta group if uniquelearnerid ==
"82dcd9c41d21b69a197eaeffde0bb78cc71d93a9ff8e8bc657260a871b6029ce"
ta group if uniquelearnerid ==
"abc01e290b24f7994c02e5bb74ef202ae39b70b437874432cef9fb7cef73f226"
ta group if uniquelearnerid ==
"324bb5c783b229013bcd68dca6d4e6c128d15f1e3bb604868bfbf81e6522dbd3"
ta group if uniquelearnerid ==
"c0b18d63f5de137f14c7c079175057bd8eefa5aedaae015b035922ae111b99ca"
ta group if uniquelearnerid ==
"37f12707f92e0da60ed2e45b5a0b3007cecb4e233e53b7973519c0b0673b7f69"
ta group if uniquelearnerid ==
"aaa2772c4938d1253e0e651ea3b0f88a760ae4453aed0d608fbb094e2a945521"
ta group if uniquelearnerid ==
"25af412370f35065ba493e1165168014f4ecbaa3969fbce21de3c031ea38dd5a"
ta group if uniquelearnerid ==
"e05cfcfb5150123cef06c0d29a5a26d754f9c3e6f1f0e67beca3cd9e47d0003e"

//DATA3: To save clean data wth only eligibles and unique IDs
*dropping duplicates as discussed internally (dropping above 14 duplicate IDs)
drop if learnerid == 196 & ilr_learnaimreftitle_aim1 == "Multiply (numeracy) provision
designed to increase confidence with numbers, as a first step towards formal numeracy
qualifications,2 to 5 hours" //kept the one with certificate course as providers same for
both courses
drop if learnerid == 235 & ilr_learnaimreftype_aim1 == 4342 //droped one with non-
regulated courses, kept the one with certification
drop if learnerid == 240 & ilr_learnaimreftitle_aim1 == "BSc (Hons) in Nursing with
Registered Nurse Status (Mental Health) - Liverpool John Moores University - Registered
Nurse Degree Apprenticeship" //dropped non-maths outcome and kept the one with
maths course-- Non regulated Tailored Learning, Essential Skills, Pre-Entry Level, Maths
drop if learnerid == 269 & ilr_learnstartdate_aim1_en == td(10sept2024) //10/09/2024
dropped and learner with 03/02/2025 saved ( to keep latest outcome)
drop if learnerid == 272 & ilr_learnaimreftitle_aim1 == "Award in Living and Working in
the UK (Entry 1)" //provider sname for both courses, retained the ID with an award
outcome
drop if learnerid == 313 & ilr_learnstartdate_aim1_en == td(16sept2024) //16/09/2024
dropped and retained the latest date 03/06/2025
```

```
drop if learnerid == 708 & ilr_learnaimreftitle_aim1 == "Non regulated Tailored Learning, Life skills: parenting skills" //deleted the non-regulated and kept the one with multiply entry
drop if learnerid == 725 & ilr_learnstartdate_aim1_en == td(30sept2024) //dropped earlier date 30/09/2024
drop if learnerid == 734 & ilr_learnstartdate_aim1_en == td(01oct2024) //keep latest
drop if learnerid == 741 & ilr_learnstartdate_aim1_en == td(02oct2024) //keep latest
drop if learnerid == 783 & ilr_llddhealthprob == 9 //provider is the same for both entries, dropped the one with health problem = 9 (NA)
drop if learnerid == 806 & ilr_l_empstatfdl == 20 //kep employment status 17, and dropped 20 (NA)
drop if learnerid == 1044 & ilr_learnaimreftitle_aim1 == "Certificate in Understanding Nutrition and Health" //dropped certificate course, and retained maths course
drop if learnerid == 1081 & ilr_ethnicity == 98 //dropped where ethnicity == 98 (NA)

//saving with new outcomes
save "$cleandata\clean_familynumeracy_20251126_uniques_to_share.dta", replace

//double checking dropped duplicates -- if these are deleted
* 1. learnerid 313 - view rows with start date 16/09/2024
br uniquelearnerid ilr_learnstartdate_aim1_en if learnerid == 313 & ilr_learnstartdate_aim1_en == td(16sep2024)

* 2. learnerid 708 - duplicate entry with this title
br uniquelearnerid ilr_learnaimreftitle_aim1 if learnerid == 708 & ilr_learnaimreftitle_aim1 == "Non regulated Tailored Learning, Life skills: parenting skills"

* 3. learnerid 725 - earlier start date 30/09/2024
br uniquelearnerid ilr_learnstartdate_aim1_en if learnerid == 725 & ilr_learnstartdate_aim1_en == td(30sep2024)

* 4. learnerid 734 - earlier start date 01/10/2024
br uniquelearnerid ilr_learnstartdate_aim1_en if learnerid == 734 & ilr_learnstartdate_aim1_en == td(01oct2024)

* 5. learnerid 741 - earlier start date 02/10/2024
br uniquelearnerid ilr_learnstartdate_aim1_en if learnerid == 741 & ilr_learnstartdate_aim1_en == td(02oct2024)

* 6. learnerid 783 - llddhealthprob equal to 9
br uniquelearnerid ilr_llddhealthprob if learnerid == 783 & ilr_llddhealthprob == 9

* 7. learnerid 806 - employment status = 20
br uniquelearnerid ilr_l_empstatfdl if learnerid == 806 & ilr_l_empstatfdl == 20

* 8. learnerid 1044 - unwanted course title
br uniquelearnerid ilr_learnaimreftitle_aim1 if learnerid == 1044 & ilr_learnaimreftitle_aim1 == "Certificate in Understanding Nutrition and Health"

* 9. learnerid 1081 - ethnicity = 98
```

```
br uniquelearnerid ilr_ethnicity if learnerid == 1081 & ilr_ethnicity == 98

*after dropping- copy ethnicity for learner 313 -- as latest outcome entry had NA for
enthincity hence replaced by the ethnicity from duplicate entry
*1 replace merged ethnicity here merged_ethnicity_en
replace ilr_ethnicity = 34 if learnerid == 313
replace ilr_ethnicity_str  = "Any Other White background" if learnerid == 313
replace merged_ethnicity_str = "Any Other White background" if learnerid == 313

replace ilr_ethnicity_en = 4 if learnerid == 313
replace merged_ethnicity_en = 3 if learnerid == 313
replace merged_ethnicity_en = 1 if learnerid == 313

//Further vairbale construction on unique dataset for Impact Evaluation code
//Generating variables for balance tests and modeling
*quick table
codebook ethnicity

gen bame = .
replace bame = 1 if ethnicity != 1 & ethnicity != .
replace bame = 0 if ethnicity == 1

recode bame (0=0 "white") (1=1 "yes"), into(bame_en)
label var bame_en "ethnicity"
ta bame_en

//collapsing var for descriptioves given DfE guidance on reporting tables
ta age_cat treat, miss col
recode age_cat (1 2 = 1 "19-34")(3 4 = 2 "35+"), into(age_collapsed) //min age is 24
label var age_collapsed "age collapsed"

*IMD
//whether a learner resides in the most deprived area based on the Index of Multiple
Deprivation (IMD) decile
gen imd =.
replace imd =1 if imd_decile==1 | imd_decile==2 //(IMD) Decile (where 1 is most
deprived 10% of LSOA)
replace imd = 2 if inrange(imd_decile, 3, 8)
replace imd = 3 if inrange(imd_decile, 9, 10)

lab var imd "Learner is resident in the most deprived area"

label define lblimd 1 "Most deprived (1-2)" 2 "Middle (3-8)" 3 "Least deprived (9-10)"
label values imd lblimd

tab imd, missing

*genterating binary imd
recode imd (1=1 "most deprived") (2 3 = 0 "middle &least depreived"), into(imd_bi)
ta imd imd_bi, miss
```

```
*employment -- (this merged with current work status from endline)
ta ilr_empstatdl_en
ta svy_end_fn_qcurrentwork_en

gen employment = ""
replace employment = "Employed" if inlist(ilr_empstatdl_en, 3, 4, 5, 6) |
inlist(svy_end_fn_qcurrentwork_en, 5, 11, 12) //qcurrentwork only captured in endline
replace employment = "Not in paid employment" if inlist(ilr_empstatdl_en, 1, 2) |
inlist(svy_end_fn_qcurrentwork_en, 1, 2, 3, 6, 7, 8, 9, 10)

encode employment, gen(employment_n)
recode employment_n (2=0 "Not in paid employment") (1=1 "Employed"),
into(employment_en)

ta employment_en, miss

//Region code used in randomisation
*check region names:
encode rgn22nm, gen(rgn22nm_en)
ren rgn22nm_en region
label var region "region names"
codebook region //merged

//quick checks - age, sex, health, ethnicity, imd, region
ta ilr_sex_en treat
ta age_cat treat
sum age
ta ethnicity treat
ta illhealth treat
ta employment_en treat
ta imd treat
ta region treat

//Constructing Outcome variables
//Secondary: confidence outcome code
*baseline composite confidence
egen confidence_maths_bs_n=rowmean(svy_bs_qnumconf_aq2_en
svy_bs_qnumconf_bq2_en svy_bs_qnumconf_cq2_en svy_bs_qnumconf_dq2_en
svy_bs_qnumconf_eq2_en svy_bs_qnumconf_fq2_en)

label var confidence_maths_bs_n "composite confidence variable- baseline"
sum confidence_maths_bs_n

*endline composite confidence
egen confidence_maths_end_n=rowmean(svy_end_fn_qnumconf_aq2_en
svy_end_fn_qnumconf_bq2_en svy_end_fn_qnumconf_cq2_en
svy_end_fn_qnumconf_dq2_en svy_end_fn_qnumconf_eq2_en
svy_end_fn_qnumconf_fq2_en)
```

```
label var confidence_maths_end_n "composite confidence variable- endline"
sum confidence_maths_end_n

////////////////////////////////////////////////////////////////////
*Secondary: Child's math attainment
//What is the average difference in maths attainment, measured by teacher assessed grades, of children in schools that receive Family Numeracy intervention,
//check variables from child data -- here we only focu on the latest scores and not 23-24(?)
ta chd_childmathsattainment2324 treat //we have 4.5k in control and 2.9 in treatment- more children than learners (as expected?)
ta chd_childmathsattainment2425 treat
ta chd_childmathsattainmentopen232 treat //1D, 1E, 1M, 1S - to understand
ta chd_childmathsattainmentopen242 treat

codebook chd_childmathsattainment2324 chd_childmathsattainment2425
encode chd_childmathsattainment2324, g(chd_childmathsattainment2324_en)
encode chd_childmathsattainment2425, g(chd_childmathsattainment2425_en)

label var chd_childmathsattainment2324_en "child's maths attainment 2023-24"
label var chd_childmathsattainment2425_en "child's maths attainment 2024-25"

*I think we should use the terms used here -- working above, working at, and working towards, Pre-KS, below pre-KS, and absent
ta chd_childmathsattainment2324_en //146 with 2 absents
ta chd_childmathsattainment2425_en  //280 with 8 absents

//for open grades-- we need more understanidn og these
codebook chd_childmathsattainmentopen232 chd_childmathsattainmentopen242
encode chd_childmathsattainmentopen232, gen(chd_childmathsopen232_n)
encode chd_childmathsattainmentopen242, gen(chd_childmathsopen242_n)

label var chd_childmathsopen232_n "child's maths attainment (open) 2023-24"
label var chd_childmathsopen242_n "child's maths attainment (open) 2024-25"

*check if we have open grades where attainment is missing
ta chd_childmathsopen232_n if chd_childmathsattainment2324_en ==. //10 entries
ta chd_childmathsopen242_n if chd_childmathsattainment2425_en ==. //10 entries


*gneratin gnew var - merging both scores
*--23-24--
gen child_maths_score2324 = chd_childmathsattainment2324
replace child_maths_score2324 = chd_childmathsattainmentopen232 if chd_childmathsattainment2324 == ""

encode child_maths_score2324, g(child_maths_score2324_n)
codebook child_maths_score2324_n
```

```
recode child_maths_score2324_n (2 3 5 9 = 1 "below expectations") (6 8 = 2 "meeting
expectations") (7= 3 "above expectations") (1= 4 "absent"),
into(child_maths_score2324_en)
label var child_maths_score2324_en "Child's maths attainment 23-24"
ta child_maths_score2324_en
ta treat

*--24-25--
gen child_maths_score2425 = chd_childmathsattainment2425
replace child_maths_score2425 = chd_childmathsattainmentopen242 if
chd_childmathsattainment2425 == ""
encode child_maths_score2425, g(child_maths_score2425_n)
codebook child_maths_score2425_n
recode child_maths_score2425_n (3 5 6 9 = 1 "below expectations") (4 8 = 2 "meeting
expectations") (2 7 = 3 "above expectations") (1 = 4 "absent"),
into(child_maths_score2425_en)
label var child_maths_score2425_en "Child's maths attainment 24-25"
ta child_maths_score2425_en
ta treat

//generating binary child attianment
recode child_maths_score2324_en (1 = 0 "below expectations") (2 3 = 1 "meeting &
above expectations") (4 = .), into(child_maths_score2324_new)
label var child_maths_score2324_new "Child's maths attainment 23-24"
ta child_maths_score2324_new, mis
recode child_maths_score2425_en (1 = 0 "below expectations") (2 3 = 1 "meeting &
above expectations") (4 = .), into(child_maths_score2425_new)
label var child_maths_score2425_new "Child's maths attainment 24-25"
ta child_maths_score2425_new, mis

//saving unique dataset
save "$cleandata\clean_familynumeracy_20251126_uniques_to_share.dta", replace

*Generating binary outcome variables
*exporting excel with reftitle and nvqlelvel -- to identify outcomes
export excel ilr_learnaimreftitle_aim1 ilr_notionalnvqlevel_aim1 ///
ilr_learnaimreftitle_aim2 ilr_notionalnvqlevel_aim2 ///
ilr_learnaimreftitle_aim3 ilr_notionalnvqlevel_aim3 ///
ilr_learnaimreftitle_aim4 ilr_notionalnvqlevel_aim4 ///
ilr_learnaimreftitle_aim5 ilr_notionalnvqlevel_aim5 ///
ilr_learnaimreftitle_aim6 ilr_notionalnvqlevel_aim6 ///
ilr_learnaimreftitle_aim7 ilr_notionalnvqlevel_aim7 ///
ilr_learnaimreftitle_aim8 ilr_notionalnvqlevel_aim8 ///
ilr_learnaimreftitle_aim9 ilr_notionalnvqlevel_aim9 ///
ilr_learnaimreftitle_aim10 ilr_notionalnvqlevel_aim10 ///
ilr_learnaimreftitle_aim11 ilr_notionalnvqlevel_aim11 ///
using "$outcome/learaimref nvqlelvel mapping.xlsx", ///
    sheet("outcome") firstrow(var) sheetreplace //From 12 onward it is empty

*checking new outcomes with date
```

```
use "$cleandata\clean_familynumeracy_20251126_uniques_to_share.dta", clear

* Keep matches and master-only; drop schools present only in using
drop _merge //if needed

//merging this data with school-date file for outcome revisions
merge m:1 schoolid using "$cleandata/treatment_start_dates.dta", keep(match master)

*inspect start date
codebook Startdate
gen startdate = date(Startdate, "MDY")
format startdate %td
codebook startdate //199 missing - all control
replace startdate = td(24apr2025) if startdate == .
codebook startdate //0 missing
gen enddate = mdy(month(startdate) + 6, day(startdate), year(startdate))
format enddate %td
codebook enddate //0 missing
br startdate enddate //for 11th may 2025 - we may not capture full 6 months as we
recieved last cut off of 11th Nov

*number of dayabetweenstartdate and 11th may 2025
* Create the reference date: 11 May 2025
gen refdate = mdy(5, 11, 2025)
* Calculate number of days between the two dates
gen days_to_11may = refdate - startdate
codebook days_to_11may
*quick check
br ilr_learnstartdate_aim1_en startdate enddate if ilr_learnstartdate_aim1_en >=
startdate & ilr_learnstartdate_aim1_en <= enddate //all correct

//starting coding from smaller set of values such as any maths qul course, then adding
any maths qul course + other relevant course to any qual course
//any maths qual course
gen any_m_qual_new = .

//date range variable for generating outcomes
*using date range by schools and 6 months from start as end date

*for loop unitl 11 as 12 onwards variables are empty-- to update acording to the new data

forvalues i = 1/11 {
    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Award for Proficiency in
Number and Measure" ///
          & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Functional Skills
Qualification in Mathematics (Entry 2)"  ///
```

```
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Functional Skills
Qualification in Mathematics"  ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Functional Skills
Qualification in Mathematics (Entry 3)"  ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Functional Skills
Qualification in Mathematics (Entry 1)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Functional Skills
Qualification in Mathematics Level 2" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in Essential
Maths in Everyday Life" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Mathematics (Entry 3)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Mathematics (Stepping Stones to Functional Skills)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Mathematics (Stepping Stones to Functional Skills) (Entry 2)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Mathematics (Stepping Stones to Functional Skills) (Entry 3)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Mathematics Skills" ///
```

```
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Mathematics Skills (Entry 1)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Mathematics Skills (Entry 2)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Mathematics Skills (Entry 3)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in The
Principles of Using Mathematical Techniques" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in the
Principles of Using Mathematical Techniques (Entry 3)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "GCSE (9-1) in
Mathematics" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Mathematics
Skills" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Mathematics
Skills - Measure, Shape and Space (Entry 2)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Mathematics
Skills - Number (Entry 1)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Mathematics
Skills - Number (Entry 2)" ///
```

```
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Mathematics
Skills - Number (Entry 3)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Mathematics
Skills (Entry 1)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Mathematics
Skills (Entry 2)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Mathematics
Skills (Entry 3)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Extended Award in
Mathematics (Stepping Stones to Functional Skills)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Extended Award in
Mathematics (Stepping Stones to Functional Skills) (Entry 1)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Extended Award in
Mathematics (Stepping Stones to Functional Skills) (Entry 2)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_m_qual_new = 1 if ilr_learnaimreftitle_aim`i' == "Extended Award in
Mathematics (Stepping Stones to Functional Skills) (Entry 3)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate
}

ta any_m_qual_new treat

//generating any maths courses
gen any_maths_course_new = any_m_qual_new //as all maths qual courses are also
maths courses
forvalues i = 1/11 {
```

```
replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Any other Multiply
(numeracy) provision not covered above, over 30 hours" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Any other Multiply
(numeracy) provision not covered above,6 to 10 hours" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated
Tailored Learning, Essential Skills, Entry Level, Maths (Entry 1)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated
Tailored Learning, Essential Skills, Entry Level, Maths (Entry 2)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated
Tailored Learning, Essential Skills, Entry Level, Maths (Entry 3)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated
Tailored Learning, Essential Skills, Pre-Entry Level, Maths" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated
provision, Entry Level, Mathematics and Statistics" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Addition of Whole
Numbers" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Data Handling" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Data Handling:
Extracting and Interpreting Data" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate
```

```
replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Data Handling:
Extracting and Sorting Data" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Data Handling:
Recording and Representing Data" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Developing and
Applying Addition and Subtraction Skills" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Developing and
Applying Decimal Skills" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Developing and
Applying Fraction Skills" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Developing and
Applying Number Skills" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Division of Whole
Numbers" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Handling data -
collect and represent information" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Handling data -
extract and sort data" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Handling data -
extract and use data" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate
```

```
replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Handling data - represent information" ///
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <= enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Measure, shape and space - calculate using shape and space" ///
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <= enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Money: Adding and Subtracting" ///
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <= enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Multiplication of Whole Numbers" ///
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <= enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Number - fractions, ratio and proportion" ///
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <= enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Number - positive and negative numbers" ///
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <= enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Subtraction of Whole Numbers" ///
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <= enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Subtraction Skills" ///
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <= enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Understanding and Using Money" ///
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <= enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Understanding Measure: Weight, Capacity and Temperature" ///
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <= enddate
```

```
replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Understanding
Measures" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Understanding
Money and Time" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Understanding
Shape and Space" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Understanding
Volume" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Using Calculations:
Multiplication and Division of Whole Numbers" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

replace any_maths_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Whole Numbers" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

}

ta any_maths_course_new treat, miss
ta any_maths_course_new any_m_qual_new, miss

//generating any qual course
gen any_q_course_new = any_m_qual_new //as all maths qualification courses are any
qualification courses as well

*replacing where we have qualifications but non maths to 1

forvalues i = 1/11 {
   replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Childcare
(Entry 3)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Creative Craft
(Entry1)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate
```

```
    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Digital and IT
Skills" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in ESOL Skills
for Life (Reading)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in ESOL Skills
for Life (Reading) (Entry 1)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in ESOL Skills
for Life (Reading) (Entry 2)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in ESOL Skills
for Life (Reading) (Entry 3)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in ESOL Skills
for Life (Speaking and Listening) (Entry 1)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in ESOL Skills
for Life (Speaking and Listening) (Entry 2)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in ESOL Skills
for Life (Speaking and Listening) (Entry 3)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Introduction to
Programming" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Manicure" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate
```

```
    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Preparing to
Work in Schools" ///
            & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Support Work
in Schools and Colleges" ///
            & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "BSc (Hons) in Nursing
with Registered Nurse Status (Mental Health) - Liverpool John Moores University -
Registered Nurse Degree Apprenticeship" ///
            & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in Childcare"
///
            & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Introducing Caring for Children and Young People" ///
            & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in Lean
Organisation Management Techniques" ///
            & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in Principles
of Business Administration (RQF)" ///
            & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in Special
Educational Needs and Disability (RQF)" ///
            & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Supporting Teaching and Learning" ///
            & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Supporting Teaching and Learning in Schools" ///
            & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate
```

```
    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Understanding Autism (RQF)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Understanding Distressed Behaviour in Children (RQF)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Understanding Nutrition and Health (RQF)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Diploma for Working in
the Early Years Sector (Early Years Educator)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Diploma in Adult Care
(RQF)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Diploma in Combined
Beauty Therapy Skills (RQF)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Extended Award in
Employability Skills" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Functional Skills
Qualification in English" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Functional Skills
Qualification in English" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Introduction to
Health, Social Care and Children's and Young People's Settings" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate
```

```
    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Creative Craft
(Entry 2)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in ESOL Skills
for Life (Writing) (Entry 2)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Living
Independently (Entry 1)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Functional Skills
Qualification in English (Entry 2)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Nail
Technology" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Diploma in
Progression" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in ESOL Skills
for Life (Writing) (Entry 1)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Living and
Working in the UK (Entry 2)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in an
Introduction to the Hair and Beauty Sector" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Diploma in Personal
Development for Employability (RQF)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate
```

```
    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in Life Skills
(Entry 1)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Preparation for Employment (Entry 2)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Extended Award in
Personal and Social Development Skills" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Award in
Understanding Safeguarding for Work, Education and Life" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Certificate in
Counselling Skills" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

}

ta any_q_course_new treat
ta any_q_course_new any_m_qual, miss

////////////any course//////////
gen any_course_new = any_q_course_new

*adding where we have any other courses to any qualifying course sub-set except
intervention itself

forvalues i = 1/11 {
    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "DfE Skills Bootcamps -
Digital - General - Level 4" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Adult skills
formula funded provision, Entry Level, ESOL, 45 to 68 hrs" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Adult skills
formula funded provision, Pre-Entry Level, ESOL, 93 to 100 hrs" ///
```

```
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Creative Arts" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Employability and transferable skills" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Essential Skills, Entry Level, ESOL (Entry 1)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Essential Skills, Pre-Entry Level, ESOL" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Essential Skills, Pre-Entry Level, English" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, First step engagement in learning" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Life skills: parenting skills" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Managing mental health and well-being" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated provision,
Entry Level, Foundations for Learning and Life" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

   replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Any other Multiply
(numeracy) provision not covered above,2 to 5 hours" ///
```

```
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Essential Digital Skills" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Adult skills
formula funded provision, Entry Level, ESOL, 101 to 196 hrs" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Essential Skills, Entry Level, Essential Digital Skills" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non-regulated Tailored
Learning, Level 2, Childcare, Teaching" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated provision,
Level 3, Health and Social Care" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Essential Skills, Entry Level, ESOL (Entry 2)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Adult skills
formula funded provision, Entry Level, ESOL, 69 to 92 hrs" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Skills Bootcamp: Offer of
an interview for a role which matches skills acquired during a bootcamp" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Life skills: first aid" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Level 1, Creative Industries, Media" ///
```

```
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Essential Skills, Level 1, Maths" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Life skills: managing life transitions" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Essential Skills, Entry Level, ESOL (Entry 3)" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Essential Skills, Pre-Entry Level, Essential Digital Skills" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non-regulated Tailored
Learning, Employer Facing Provision, Foundations for Learning and Life" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Level 2, Digital Sector" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Adult skills
formula funded provision, Entry Level, Maths, 45 to 68 hrs" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning, Essential Skills, Level 1, ESOL" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non-regulated Tailored
Learning, Level 1, Health and Social Care" ///
        & ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

    replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated Tailored
Learning" ///
```

```
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

	replace any_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Non regulated
Tailored Learning, Vocational introduction - Health and Social Care" ///
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

}

ta any_course_new any_q_course_new, miss
ta any_course_new any_maths_course_new, miss
ta any_course_new any_m_qual_new, miss

////L2 math qual bearing courses/////////
*Maths (further), gcse maths, and L2 qual maths course
gen any_L2_m_q_course_new = .

forvalues i = 1/11 {
replace any_L2_m_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "Functional Skills
Qualification in Mathematics Level 2" ///
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate
	//already L2, also nvqlevel is 2

replace any_L2_m_q_course_new = 1 if ilr_learnaimreftitle_aim`i' == "GCSE (9-1) in
Mathematics" ///
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate
	//above L2, also nvqlevel is 2

replace any_L2_m_q_course_new = 1 if ilr_learnaimreftitle_aim`i' ==  "Functional Skills
Qualification in Mathematics" &  ilr_notionalnvqlevel_aim`i'== "2" ///
	& ilr_learnstartdate_aim`i'_en >= startdate & ilr_learnstartdate_aim`i'_en <=
enddate

}

ta any_L2_m_q_course_new treat, miss //0


////////////////////////////////////////////////////////////////////
*primary outcomes
gen prout_new = 0
replace prout_new = 1 if any_maths_course_new == 1 //we need the first session date to
complete this code EP trial syntax is using a range
label var prout_new "parent's progression to any further maths course"
ta prout_new treat
```

```
label define lbl_prout_new 0 "parent did not progress to any further maths course" 1
"parent progressed to any further maths course"
label values prout_new lbl_prout_new

*secondary outcomes
gen sout_1_new = 0
replace sout_1_new = 1 if any_course_new == 1
label var sout_1_new "parent's progression to any further course" //this should include all
non blanks
ta sout_1_new treat

label define lbl_sout_1_new 0 "parent did not progress to any further course" 1 "parent
progressed to any further course"
label values sout_1_new lbl_sout_1_new

gen sout_2_new = 0
replace sout_2_new = 1 if any_q_course_new == 1
label var sout_2_new "progression to any qualification bearing course" //all qual courses
ta sout_2_new treat

label define lbl_sout_2_new 0 "parent did not progress to any qualification bearing
course" 1 "parent progressed to any qualification bearing course"
label values sout_2_new lbl_sout_2_new

gen sout_3_new = 0
replace sout_3_new = 1 if any_m_qual_new == 1
label var sout_3_new "progression to any qualification bearing maths course" //all qual
course- maths
ta sout_3_new treat

label define lbl_sout_3_new 0 "parent did not progress to any qualification bearing maths
course" 1 "parent progressed to any qualification bearing maths course"
label values sout_3_new lbl_sout_3_new

gen sout_4_new = 0
replace sout_4_new = 1 if any_L2_m_q_course_new == 1
label var sout_4_new "progression to a L2 qualification bearing maths course" //all qual
courses- maths/l2
ta sout_4_new treat

label define lbl_sout_4_new 0 "parent did not progress to any L2-qualification bearing
maths course" 1 "parent progressed to any L2-qualification bearing maths course"
label values sout_4_new lbl_sout_4_new

//Generating 0-1-2 coded variables with 'missing' for modeling

recode ilr_sex_en (0=0 "female")(1=1 "male")(.=2 "missing"), into(ilr_sex_mis)
recode bame_en (0=0 "white")(1=1 "bame")(.=2 "missing"), into(bame_en_mis)
recode employment_en (0=0 "not in employment")(1=1 "employed")(.=2 "missing"),
into(employment_en_mis)
```

```
recode imd_bi (0=0 "middle&least depreived")(1=1 "most deprived")(.=2 "missing"),
into(imd_bi_mis)
recode illhealth (0=0 "No") (1=1 "Yes")(.=2 "missing"), into(health_mis)

codebook ilr_sex_en ilr_sex_mis bame_en bame_en_mis employment_en
employment_en_mis imd_bi imd_bi_mis illhealth health_mis


//Compliance variable

*your compliance indicator is as follows - out of the six sessions parents at least have to
attend three 'and' complete at least 50% of the home learning tasks- - your first task
would be to construct this var. Child attendance does not matter. write a code to see if
the parent has attended at least any 3 out of 6 sessions and any 3 out of 6 hl.
codebook session1n_p_en session2ssm_p_en session3s_p_en session4ssm2_p_en
session5n2_p_en session6s2_p_en  //session attendance


*assign 1 numeric to each full attendace by parents in session (where parital is not
preset)
foreach v in session2ssm_p_en session3s_p_en session4ssm2_p_en session6s2_p_en
{
    gen full_part_`v' = 1 if (`v' == 1 ) //numeric to be able to sum
}

*with full and partials
foreach v in session1n_p_en session5n2_p_en  {
    gen full_part_`v' = 1 if (`v' == 1 | `v' == 2 ) //numeric to be able to sum
}

//home learning

codebook session1n_hl_en session2ssm_hl_en session3s_hl_en session4ssm2_hl_en
session5n2_hl_en session6s2_hl_en //home learning attendace

*assign 1 to each numeric HL by parents in HL activity- for full compeltion and partials
foreach v in session1n_hl_en session2ssm_hl_en session3s_hl_en session4ssm2_hl_en
session5n2_hl_en session6s2_hl_en {
    gen full_part_`v' = 1 if (`v' == 1 | `v' == 2 ) //numeric to be able to sum
}


*check
foreach v in session1n_p_en session2ssm_p_en session3s_p_en session4ssm2_p_en
session5n2_p_en session6s2_p_en ///
session1n_hl_en session2ssm_hl_en session3s_hl_en session4ssm2_hl_en
session5n2_hl_en session6s2_hl_en {
    codebook full_part_`v'
}
```

```
egen sum_full_part_parent = rowtotal(full_part_session1n_p_en
full_part_session2ssm_p_en full_part_session3s_p_en ///
                        full_part_session4ssm2_p_en full_part_session5n2_p_en
full_part_session6s2_p_en)

egen sum_full_part_parent_hl = rowtotal(full_part_session1n_hl_en
full_part_session2ssm_hl_en full_part_session3s_hl_en ///
                          full_part_session4ssm2_hl_en full_part_session5n2_hl_en
full_part_session6s2_hl_en)
*quick checks
br sum_full_part_parent session1n_p_en session2ssm_p_en session3s_p_en
session4ssm2_p_en session5n2_p_en session6s2_p_en if treat == 1 &
sum_full_part_parent== 0
br sum_full_part_parent_hl session1n_hl_en session2ssm_hl_en session3s_hl_en
session4ssm2_hl_en session5n2_hl_en session6s2_hl_en if treat == 1 &
sum_full_part_parent_hl == 0

gen comp_full_part = 0 if treat == 1  //on treated have attendance info
replace comp_full_part = 1 if sum_full_part_parent >= 3 & sum_full_part_parent_hl >= 3
replace comp_full_part = 0 if comp_full_part == .

ta comp_full_part, mis

//saving with new outcomes
save "$cleandata\clean_familynumeracy_20251126_uniques_to_share.dta", replace

////////////////////////////////////////////////////////////////////////////////
*--running tabouts for IPE
*--Parents'/carers' overall satisfaction with the course (endline only; RQ5)
codebook svy_end_fn_qsatall_en
ta svy_end_fn_qsatall_en treat, col
tabout svy_end_fn_qsatall_en treat using "$outcome/pre-post-report_f.xls", replace
cells(freq col) f(0)

*Prgram recommendation
ta svy_end_fn_qrec_en treat, col
*engaging
ta svy_end_fn_qengaging_en treat, col
*math covered
ta svy_end_fn_qease_en treat, col

*--Perceived outcomes for parents/carers and their child, including on attitudes,
willingness to engage with maths, understanding of maths concepts in the Key Stage
curriculum, and self-efficacy (endline only; RQ6)
*QPOUTCOMES //To what extent do you agree or disagree with the following? (options)

foreach v in svy_end_fn_qpoutcomes_aq2_en svy_end_fn_qpoutcomes_bq2_en
svy_end_fn_qpoutcomes_cq2_en svy_end_fn_qpoutcomes_dq2_en
svy_end_fn_qpoutcomes_eq2_en svy_end_fn_qpoutcomes_fq2_en {
```

```
	tabout `v' treat using "$outcome/pre-post-report_f.xls", append cells(freq col)
	f(0)
}

codebook svy_end_fn_qcoutcomes_aq2_en svy_end_fn_qcoutcomes_bq2_en
svy_end_fn_qcoutcomes_cq2_en svy_end_fn_qcoutcomes_dq2_en


foreach v in svy_end_fn_qcoutcomes_aq2_en svy_end_fn_qcoutcomes_bq2_en
svy_end_fn_qcoutcomes_cq2_en svy_end_fn_qcoutcomes_dq2_en {

	tabout `v' treat using "$outcome/pre-post-report_f.xls", append cells(freq col) f(0)
}


*--Awareness and understanding of maths in the everyday context, and their recall of
Family Numeracy activities as part of the course (endline only; RQ1, RQ2, RQ5, RQ6)

codebook svy_bs_qconf_en svy_end_fn_qconf_en
ta svy_end_fn_qconf_en treat, col

tabout svy_bs_qconf_en treat using "$outcome/pre-post-report_f.xls", append cells(freq
col) f(0)
tabout svy_end_fn_qconf_en treat using "$outcome/pre-post-report_f.xls", append
cells(freq col) f(0)
*--note: recall their FN activities - no such indicator found

*--Suggested improvements to the course (endline only; RQ8) -- pich this up from the
word document
codebook svy_end_fn_qchange //open text -- further coded in excel to bring consistency
codebook svy_end_fn_qsuggestions svy_end_fn_qsuggestionscodes //open text --
further coded in excel to bring consistency


*--Confidence - alongside above - I also need the number of parents who answered both
at baseline and endline - by T& C-- this is (this is the outcome variable), what %
responded both baseline and endline (by group)-
codebook svy_end_fn_qnumconf_aq2_en svy_end_fn_qnumconf_bq2_en
svy_end_fn_qnumconf_cq2_en svy_end_fn_qnumconf_dq2_en
svy_end_fn_qnumconf_eq2_en svy_end_fn_qnumconf_fq2_en

foreach v in svy_end_fn_qnumconf_aq2_en svy_end_fn_qnumconf_bq2_en
svy_end_fn_qnumconf_cq2_en svy_end_fn_qnumconf_dq2_en
svy_end_fn_qnumconf_eq2_en svy_end_fn_qnumconf_fq2_en {

	tabout `v' treat using "$outcome/pre-post-report_f.xls", append cells(freq col) f(0)
}
```

```
codebook svy_bs_qnumconf_aq2_en svy_bs_qnumconf_bq2_en
svy_bs_qnumconf_cq2_en svy_bs_qnumconf_dq2_en svy_bs_qnumconf_eq2_en
svy_bs_qnumconf_fq2_en

foreach v in svy_bs_qnumconf_aq2_en svy_bs_qnumconf_bq2_en
svy_bs_qnumconf_cq2_en svy_bs_qnumconf_dq2_en svy_bs_qnumconf_eq2_en
svy_bs_qnumconf_fq2_en {

        tabout `v' treat using "$outcome/pre-post-report_f.xls", append cells(freq col) f(0)
}


*--Change in parental engagement by treatment group
codebook svy_bs_qpeng1_en svy_bs_qpeng2_en svy_bs_qpeng3_en
svy_bs_qpeng4_en svy_bs_qpeng5_en svy_end_fn_qpeng1_en svy_end_fn_qpeng2_en
svy_end_fn_qpeng3_en svy_end_fn_qpeng4_en svy_end_fn_qpeng6_en
svy_end_fn_qpeng5_en svy_bs_qpeng6_en svy_bs_qpeng7_en svy_end_fn_qpeng1_en
svy_end_fn_qpeng2_en svy_end_fn_qpeng3_en svy_end_fn_qpeng4_en
svy_end_fn_qpeng6_en svy_end_fn_qpeng5_en svy_end_fn_qpeng7_en

foreach v in svy_bs_qpeng1_en svy_bs_qpeng2_en svy_bs_qpeng3_en
svy_bs_qpeng4_en svy_bs_qpeng5_en svy_end_fn_qpeng1_en svy_end_fn_qpeng2_en
svy_end_fn_qpeng3_en svy_end_fn_qpeng4_en svy_end_fn_qpeng6_en
svy_end_fn_qpeng5_en svy_bs_qpeng6_en svy_bs_qpeng7_en svy_end_fn_qpeng1_en
svy_end_fn_qpeng2_en svy_end_fn_qpeng3_en svy_end_fn_qpeng4_en
svy_end_fn_qpeng6_en svy_end_fn_qpeng5_en svy_end_fn_qpeng7_en {

        tabout `v' treat using "$outcome/pre-post-report.xls", append cells(freq col) f(0) f(0)
}

***Impact evaluation

**Missing data prediction by treatment status
foreach v of varlist ilr_sex_en ethnicity illhealth employment_en {
    gen `v'_missing = 1 if `v' == .
        replace `v'_missing = 0 if `v'_missing == .
        logit `v'_missing treat
}

//--BALANCE TESTS--//

*--demographics--
foreach v of varlist ilr_sex_en bame_en employment_en imd_bi illhealth age
child_maths_score2324_new confidence_maths_bs confidence {
    reg `v' treat i.providerid, vce(cluster schoolid)
}

*for each baseline cofidence used to generated composite confidence
```

```
foreach v of varlist svy_bs_qnumconf_aq2_en svy_bs_qnumconf_bq2_en
svy_bs_qnumconf_cq2_en svy_bs_qnumconf_dq2_en svy_bs_qnumconf_eq2_en
svy_bs_qnumconf_fq2_en {
    reg `v' treat i.providerid, vce(cluster schoolid)
}

//Primary outcome
*prout--- rerun after imputaion
ta prout treat
tabulate prout treat, exact //exact fisher

*running fishers excat and ***Haldane–Anscombe (0.5 correction)****
local a = 22.5
local b = 0.5
local c = 200.5
local d = 199.5

local ora = (`a'*`d')/(`b'*`c')
display "OR = " `ora'

local logor = ln(`ora')
local se = sqrt(1/`a' + 1/`b' + 1/`c' + 1/`d')

local ll = `logor' - 1.96*`se'
local ul = `logor' + 1.96*`se'

display "95% CI for OR: " exp(`ll') "  " exp(`ul')

cc prout treat
cs prout treat, or //odds ratio

exlogistic prout treat //exlogistic

////////////////////////////////////////////////////////////////////////////
//Modelling for primary outcome: Progression to any further maths course

*--model 1--
eststo p1: mixed prout treat || schoolid :, vce(cluster schoolid)

esttab p1 using "$outcome/results_f.csv", replace ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("Effect of Treatment on Prout")


*--model 2 -- mixed + covariates
eststo p2: mixed prout treat i.providerid || schoolid :, vce(cluster schoolid)

esttab p2 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
```

```
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("Effect of Treatment on Prout")

*--model 3 -- + covariates
eststo p3: mixed prout treat i.ilr_sex_mis i.bame_en_mis i.employment_en_mis
ib2.health_mis c.age i.imd_bi_mis i.providerid || schoolid :, vce(cluster schoolid)

esttab p3 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("Effect of Treatment on Prout (Reg- controlled for covariates)")

*-- model 4 -- firthlogit
eststo p4: firthlogit prout treat i.ilr_sex_mis i.bame_en_mis i.employment_en_mis
ib2.health_mis c.age i.imd_bi_mis i.providerid

esttab p4 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("Effect of Treatment on Prout (firthlogit- controlled for covariates)")

////////////////////////////////////////////////////////////////////////////

*secondary outcome 1: sout_1: parent's progression to any further course
*--model 1
eststo s1: melogit sout_1_new treat || schoolid :, vce(cluster schoolid)

esttab s1 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("Effect of Treatment on sout1")


*--model 2 with added provider FE
eststo s2: melogit sout_1_new treat i.providerid || schoolid :, vce(cluster schoolid)

esttab s2 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("Effect of Treatment on sout1 with Pr FE")

////////////////////////////////////////////////////////////////////////////
//secondary outcome 4: composite confidence
*--model 1--
eststo c1: mixed confidence_maths_end_n treat confidence_maths_bs_n || schoolid :,
vce(cluster schoolid)

esttab c1 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
```

```
    title("Effect of Treatment on confidence")

*--model 2--
eststo c2: mixed confidence_maths_end_n treat confidence_maths_bs_n i.providerid ||
schoolid :, vce(cluster schoolid)

esttab c2 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("Effect of Treatment on confidence with Pr FE")

*--model 3--
eststo c3: mixed confidence_maths_end_n treat confidence_maths_bs_n i.ilr_sex_mis
i.bame_en_mis i.employment_en_mis ib2.health_mis c.age i.imd_bi_mis i.providerid ||
schoolid :, vce(cluster schoolid)

esttab c3 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("Effect of Treatment on confidence (controlled for covariates)")


*--model 1-- confidence with numbers
eststo cn1: mixed overall_conf_end_cat treat overall_conf_bs_cat || schoolid :,
vce(cluster schoolid)

esttab cn1 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("Effect of Treatment on confidence with num")

*--model 2--
eststo cn2: mixed overall_conf_end_cat treat overall_conf_bs_cat i.providerid || schoolid
:, vce(cluster schoolid)

esttab cn2 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("Effect of Treatment on confidence with num(Pr FE)")

*--model 3--
eststo cn3: mixed overall_conf_end_cat treat overall_conf_bs_cat i.ilr_sex_mis
i.bame_en_mis i.employment_en_mis ib2.health_mis c.age i.imd_bi_mis i.providerid ||
schoolid :, vce(cluster schoolid)

esttab cn3 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("Effect of Treatment on confidence with num- controlled")
```

```
////////////////////////////////////////////////////////////////////////////
//secondary outcome 5: child scores

*-model 1 --
eststo m1: melogit child_maths_score2425_new treat child_maths_score2324_new ||
schoolid :, vce(cluster schoolid)

esttab m1 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("Effect of Treatment on maths score")

*--model 2 --
eststo m2: melogit child_maths_score2425_new treat child_maths_score2324_new
i.providerid || schoolid :, vce(cluster schoolid)

esttab m2 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("Effect of Treatment on math score with Pr FE")

////////////////////////////////////////////////////////////////////////////
//interactions (primary outcome and covariates)

*sex
eststo pi1: mixed prout treat##i.ilr_sex_mis ib1.bame_en_mis i.employment_en_mis
ib2.health_mis c.age i.imd_bi_mis i.providerid || schoolid :, vce(cluster schoolid)

esttab pi1 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("interaction with sex")

*age
eststo pi2: mixed prout treat##c.age i.ilr_sex_mis ib1.bame_en_mis
i.employment_en_mis ib2.health_mis i.imd_bi_mis i.providerid || schoolid :, vce(cluster
schoolid)

esttab pi2 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("interaction with age")

*ill health
eststo pi3: mixed prout treat##ib0.health_mis i.ilr_sex_mis ib1.bame_en_mis
i.employment_en_mis c.age i.imd_bi_mis i.providerid || schoolid :, vce(cluster schoolid)

esttab pi3 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
```

```
    title("interaction with health")

*ethnicity
eststo pi4: mixed prout treat##ib1.bame_en_mis i.ilr_sex_mis i.employment_en_mis
ib2.health_mis c.age i.imd_bi_mis i.providerid || schoolid :, vce(cluster schoolid)

esttab pi4 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("interaction with ethnicity")

*employment_en
eststo pi5: mixed prout treat##i.employment_en_mis i.ilr_sex_mis i.bame_en_mis
ib2.health_mis c.age i.imd_bi_mis i.providerid || schoolid :, vce(cluster schoolid)

esttab pi5 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("interaction with employment")

*imd
eststo pi6: mixed prout treat##i.imd_bi_mis i.ilr_sex_mis ib1.bame_en_mis
i.employment_en_mis ib2.health_mis c.age i.providerid || schoolid :, vce(cluster schoolid)

esttab pi6 using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("interaction with imd")

////////////////////////////////////////////////////////////////////////////
//compliance
*primary
eststo cp: ivregress 2sls prout i.ilr_sex_mis i.bame_en_mis i.employment_en_mis
ib2.health_mis c.age i.imd_bi_mis i.providerid (comp_full_part = treat), vce(cluster
schoolid)

esttab cp using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("comp-prout")

*secondary: to any further course
eststo cs: ivregress 2sls sout_1_new i.ilr_sex_mis i.bame_en_mis i.employment_en_mis
ib2.health_mis c.age i.imd_bi_mis i.providerid (comp_full_part = treat), vce(cluster
schoolid)

esttab cs using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("comp_sout1")
```

```
*secondary: child maths
eststo cm: ivregress 2sls child_maths_score2425_new child_maths_score2324_new
i.ilr_sex_mis i.bame_en_mis i.employment_en_mis ib2.health_mis c.age i.imd_bi_mis
i.providerid (comp_full_part = treat), vce(cluster schoolid)

esttab cm using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("comp_child math")


////////////////////////////////////////////////////////////////////////////
//Effect size

*--primary outcome: progression to any further math course: model 1 (mixed)
mixed prout treat i.ilr_sex_mis i.bame_en_mis i.employment_en_mis ib2.health_mis
c.age i.imd_bi_mis i.providerid || schoolid :, vce(cluster schoolid)
scalar N_m  = e(N)
scalar b_m  = _b[treat]
scalar se_m = _se[treat]
scalar lo_m = b_m - 1.96*se_m
scalar hi_m = b_m + 1.96*se_m
scalar z    = b_m / se_m
scalar pval = 2*normal(-abs(z))
margins, at(treat=(0 1))
matrix M = r(table)
scalar mean0 = M[1,1]
scalar mean1 = M[1,2]
scalar md    = mean1 - mean0
capture scalar sd_res = exp(_b[lnsig_e:_cons])
if _rc {
    di as err "Could not read residual SD from lnsig_e; computing from residuals as
fallback"
    predict double ehat, residuals
    quietly summarize ehat
    scalar sd_res = r(sd)
    drop ehat
}
scalar J      = 1 - (3 / (4*N_m - 9))
scalar hedges_g =  J * (md / sd_res)
scalar se_g     =  J * (se_m / sd_res)
scalar g_lo     =  hedges_g - 1.96 * se_g
scalar g_hi     =  hedges_g + 1.96 * se_g

display "-------------------------------------------"
display "N: " N_m
display "Treatment coef: " b_m
display "SE: " se_m
display "95% CI: [" lo_m ", " hi_m "]"
```

```
display "p-value: " pval
display "Hedge's g: " hedges_g
display "95% CI: [" g_lo ", " g_hi "]"
display "-------------------------------------------"


*--secondary outcome: progression to any courses
melogit sout_1_new treat i.providerid || schoolid :, vce(cluster schoolid)

scalar N_m = e(N)
scalar b_m = _b[treat]
scalar se_m = _se[treat]
scalar z = b_m / se_m
scalar pval = 2*normal(-abs(z))
scalar lo_m = b_m - 1.96*se_m
scalar hi_m = b_m + 1.96*se_m

margins, at(treat=(0 1)) predict(mu)
matrix T = r(table)
scalar p0_m = T[1,1]
scalar p1_m = T[1,2]

scalar h_m = 2*asin(sqrt(p1_m)) - 2*asin(sqrt(p0_m))
scalar se_hm = sqrt(2/N_m)
scalar h_lo_m = h_m - 1.96*se_hm
scalar h_hi_m = h_m + 1.96*se_hm

display "-------------------------------------------"
display "N: " N_m
display "Treatment coef: " b_m
display "SE: " se_m
display "95% CI: [" lo_m ", " hi_m "]"
display "p-value: " pval
display "p0 (control predicted prob): " p0_m
display "p1 (treat predicted prob): " p1_m
display "Cohen's h: " h_m
display "Cohen's h 95% CI: [" h_lo_m ", " h_hi_m "]"
display "-------------------------------------------"

*--Secondary outcome: confidence in maths

mixed confidence_maths_end_n treat confidence_maths_bs_n i.ilr_sex_mis
i.bame_en_mis i.employment_en_mis ib2.health_mis c.age i.imd_bi_mis i.providerid ||
schoolid :, vce(cluster schoolid)

scalar N_m  = e(N)
scalar b_m  = _b[treat]
scalar se_m = _se[treat]
scalar lo_m = b_m - 1.96*se_m
scalar hi_m = b_m + 1.96*se_m
```

```
scalar z    = b_m / se_m
scalar pval = 2*normal(-abs(z))
margins, at(treat=(0 1))
matrix M = r(table)
scalar mean0 = M[1,1]
scalar mean1 = M[1,2]
scalar md    = mean1 - mean0
capture scalar sd_res = exp(_b[lnsig_e:_cons])
if _rc {
    di as err "Could not read residual SD from lnsig_e; computing from residuals as
fallback"
    predict double ehat, residuals
    quietly summarize ehat
    scalar sd_res = r(sd)
    drop ehat
}
scalar J      = 1 - (3 / (4*N_m - 9))
scalar hedges_g =  J * (md / sd_res)
scalar se_g     =  J * (se_m / sd_res)
scalar g_lo     =  hedges_g - 1.96 * se_g
scalar g_hi     =  hedges_g + 1.96 * se_g

display "-------------------------------------------"
display "N: " N_m
display "Treatment coef: " b_m
display "SE: " se_m
display "95% CI: [" lo_m ", " hi_m "]"
display "p-value: " pval
display "Hedge's g: " hedges_g
display "95% CI: [" g_lo ", " g_hi "]"
display "-------------------------------------------"

*--secondary-- confidence in numbers in everyday life--
mixed overall_conf_end_cat treat overall_conf_bs_cat i.ilr_sex_mis i.bame_en_mis
i.employment_en_mis ib2.health_mis c.age i.imd_bi_mis i.providerid || schoolid :,
vce(cluster schoolid)

scalar N_m  = e(N)
scalar b_m  = _b[treat]
scalar se_m = _se[treat]
scalar lo_m = b_m - 1.96*se_m
scalar hi_m = b_m + 1.96*se_m
scalar z    = b_m / se_m
scalar pval = 2*normal(-abs(z))
margins, at(treat=(0 1))
matrix M = r(table)
scalar mean0 = M[1,1]
scalar mean1 = M[1,2]
scalar md    = mean1 - mean0
capture scalar sd_res = exp(_b[lnsig_e:_cons])
```

```
if _rc {
    di as err "Could not read residual SD from lnsig_e; computing from residuals as
fallback"
    predict double ehat, residuals
    quietly summarize ehat
    scalar sd_res = r(sd)
    drop ehat
}
scalar J      = 1 - (3 / (4*N_m - 9))
scalar hedges_g =  J * (md / sd_res)
scalar se_g     =  J * (se_m / sd_res)
scalar g_lo     =  hedges_g - 1.96 * se_g
scalar g_hi     =  hedges_g + 1.96 * se_g

display "-------------------------------------------"
display "N: " N_m
display "Treatment coef: " b_m
display "SE: " se_m
display "95% CI: [" lo_m ", " hi_m "]"
display "p-value: " pval
display "Hedge's g: " hedges_g
display "95% CI: [" g_lo ", " g_hi "]"
display "-------------------------------------------"

*--secondary outcome: child's maths attainment

melogit child_maths_score2425_new treat child_maths_score2324_new i.providerid ||
schoolid :, vce(cluster schoolid)

scalar N_m = e(N)
scalar b_m = _b[treat]
scalar se_m = _se[treat]
scalar z = b_m / se_m
scalar pval = 2*normal(-abs(z))
scalar lo_m = b_m - 1.96*se_m
scalar hi_m = b_m + 1.96*se_m

margins, at(treat=(0 1)) predict(mu)
matrix T = r(table)
scalar p0_m = T[1,1]
scalar p1_m = T[1,2]

scalar h_m = 2*asin(sqrt(p1_m)) - 2*asin(sqrt(p0_m))
scalar se_hm = sqrt(2/N_m)
scalar h_lo_m = h_m - 1.96*se_hm
scalar h_hi_m = h_m + 1.96*se_hm

display "-------------------------------------------"
display "N: " N_m
display "Treatment coef: " b_m
```

```
display "SE: " se_m
display "95% CI: [" lo_m ", " hi_m "]"
display "p-value: " pval
display "p0 (control predicted prob): " p0_m
display "p1 (treat predicted prob): " p1_m
display "Cohen's h: " h_m
display "Cohen's h 95% CI: [" h_lo_m ", " h_hi_m "]"
display "-------------------------------------------"
display "-------------------------------------------"
////////////////////////////////////////////////////////////////////////////
//Sensitivity analysis: post rand recruits: marking 18 identified IDs in analysis sample but not in randomised sample

gen post_rand_recruit = 0
replace post_rand_recruit = 1 if ///
uniquelearnerid ==
"6b924991b04f50f9c34c6bf371df06ab494f32544a8ca518683c7c506bac363b" | ///
uniquelearnerid ==
"01c80b261ee34161ed3df6efb09a77863b813ad54c84163675b36c0d737b6a0c" | ///
uniquelearnerid ==
"906b913e84c3f93adb41148786ed1662f8b3f7c96effda327a7357b0ad1ae052" | ///
uniquelearnerid ==
"766c4c62f36ea8ee5f35ba85efc8262ec1286b54b073232e965833ee0af698e2" | ///
uniquelearnerid ==
"25af412370f35065ba493e1165168014f4ecbaa3969fbce21de3c031ea38dd5a" | ///
uniquelearnerid ==
"5adfa13d5041939368b388cc24bbf1e296943ae854c0ec253d8304dc79eb8e71" | ///
uniquelearnerid ==
"258d770d7ecf19b4d7830f84bc164af73bc03d10b16b028a5cb6f29a1b6abaf8" | ///
uniquelearnerid ==
"f9833a331e5166d988029de49e2a9388bf45a707bcb97c14dfdb71594538fa8e" | ///
uniquelearnerid ==
"8fc8f5943ccae057e0cddb700227e336dc3dd9ec45bb69078cb48a3a1de43769" | ///
uniquelearnerid ==
"2e166fe586a0174d17274f1fa7d833f6f4b215901e5190e37f2c21b91c1ae133" | ///
uniquelearnerid ==
"3d119fe509c300901068af54cc5094f4add01b04abb0d1cf8e5163f5cc17627b" | ///
uniquelearnerid ==
"d1e7734e9ed21099d9f76e63a33e878679e56b5900b0098c7e3ca5d2d1899277" | ///
uniquelearnerid ==
"fdeb05e874ed258d54273f61dfde94184df37c0bdbedb05b077972ad904aaf9b" | ///
uniquelearnerid ==
"63bd4173ce1a28ab0338fef0193c889da43057273baa504e74e0807d0c543928" | ///
uniquelearnerid ==
"95fd828bd2d11fd1480e8b5e30d18125156c0f3ee7518842c43ce99e8d257044" | ///
uniquelearnerid ==
"220007c0ae7d7ab66985e3141618b0c99546f19e1a5313a66114558d58631afd" | ///
uniquelearnerid ==
"4b66285a6b3e6af4ed78cb69e3e160a3df55233680e2aa68725c59926ab32f28" | ///
```

```
uniquelearnerid ==
"7ae68e360e1e1904d2cf25f687dfc7b2756f240e35d1fdb0c012876e972b81c7"
*--modelling only for learners recruited pre randomisation--
eststo sa: mixed prout treat i.ilr_sex_mis i.bame_en_mis i.employment_en_mis
ib0.health_mis c.age i.imd_bi_mis i.providerid if post_rand_recruit == 0 || schoolid :,
vce(cluster schoolid)
esttab sa using "$outcome/results_f.csv", append ///
    b(%9.2f) se(%9.2f) ///
    star(* 0.05 ** 0.01 *** 0.001) ///
    title("sensitivity analysis")
```

Appendix 6: Additional impact evaluation tables

Table A 2: Sample proportions by baseline observed characteristics

Variable	Term	N	Base N	Percentage (%)	Data source
Deprivation	**Missing**	6	421	[u]	ILR and survey
Deprivation	**Low**	232	421	55	ILR and survey
Deprivation	**High**	183	421	44	ILR and survey
Employment	**Missing**	220	421	52	ILR and survey
Employment	**Not employed**	131	421	31	ILR and survey
Employment	**Employed**	70	421	17	ILR and survey
Ethnicity	**Missing**	179	421	42	ILR and survey
Ethnicity	**White**	129	421	31	ILR and survey
Ethnicity	**Mixed/Multiple ethnic groups**	[c]	421	[u]	ILR and survey
Ethnicity	**Asian or Asian British**	71	421	17	ILR and survey
Ethnicity	**Black, Black British, Caribbean or African**	[c]	421	[u]	ILR and survey
Ethnicity	**Other ethnic groups**	22	421	[u]	ILR and survey
Sex	**Missing**	[c]	421	59	ILR
Sex	**Male**	[c]	421	[u]	ILR
Sex	**Female**	168	421	40	ILR
Ill-health	**Missing**	185	421	44	ILR and survey
Ill-health	**No**	196	421	47	ILR and survey
Ill-health	**Yes**	40	421	9	ILR and survey

Note: [c] represents cells where the count is less than 5 and [u] indicates suppression of percentages were count < 30 due to low reliability.

Source: ILR, baseline and endline survey. Base: All parents/carers, N=421

Table A 3: Prediction of missingness in baseline characteristics by treatment status

Variables	Estimate	SE	P-value	Base N
Male (reference: female)	-1.11***	0.21	<0.001	421
White (reference: other ethnic groups)	-0.35	0.20	0.079	421
Ill health and disability (reference: no)	-0.21	0.20	0.275	421
Employed (reference: no)	-0.46**	0.20	0.019	421
Confidence in maths (overall)	0.12	0.22	0.581	421
Confidence in maths (composite)	0.10	0.22	0.670	421
Child's maths attainment	0.71**	0.22	0.001	421

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are clustered at school level. Source: ILR and survey. Base: All parents/carers.

Table A 4: Balance of baseline characteristics and baseline outcome variables

Variables	Estimate	SE	P-value	Base N
Male (reference: female)	-0.04	0.03	0.294	172
White (reference: other ethnic groups)	-0.20**	0.07	0.009	241
Ill health and disability (reference: no)	0.03	0.06	0.572	236
Most deprived (reference: no)	-0.12	0.09	0.212	415
Employed (reference: no)	0.27**	0.08	0.002	201
Age	0.35	0.84	0.676	421
Confidence in maths (overall)	-0.87*	0.32	0.010	109
Confidence in maths (composite)	-0.42*	0.16	0.011	106
Child's maths attainment	-0.11	0.07	0.134	286

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are clustered at school level.

Source: ILR and survey. Base: All parents/carers.

Table A 5: Regression analysis results for primary outcome

Variables	Model 1	Model 2	Model 3	Model 4
Treatment	0.13**	0.22***	0.18**	4.91**
Treatment	(0.05)	(0.06)	(0.06)	(1.87)
Male (reference: female)	[z]	[z]	-0.07*	-1.53
Male (reference: female)	[z]	[z]	(0.03)	(1.933)
White (reference: other groups)	[z]	[z]	-0.02	-0.19
White (reference: other groups)	[z]	[z]	(0.04)	(1.12)
Employed (reference: no)	[z]	[z]	-0.02	-0.77
Employed (reference: no)	[z]	[z]	(0.03)	(1.06)
Ill health (reference: no)	[z]	[z]	0.05	1.03
Ill health (reference: no)	[z]	[z]	(0.04)	(2.70)
Age	[z]	[z]	0.00	0.02
Age	[z]	[z]	(0.00)	(0.05)
Most deprived (reference: no)	[z]	[z]	-0.02	-0.57
Most deprived (reference: no)	[z]	[z]	(0.03)	(0.95)
Provider ID: 3	[z]	0.00	0.00	0.00
Provider ID: 3	[z]	[x]	[x]	[x]
Provider ID: 21	[z]	0.16*	0.15	10.10**
Provider ID: 21	[z]	(0.07)	(0.09)	(3.18)
Provider ID: 24	[z]	0.12	0.08	1.68
Provider ID: 24	[z]	(0.07)	(0.08)	(2.21)
Provider ID: 38	[z]	0.08	0.10	2.87

Variables	Model 1	Model 2	Model 3	Model 4
Provider ID: 38	[z]	(0.05)	(0.06)	(1.77)
Provider ID: 41	[z]	0.16*	0.11	5.91
Provider ID: 41	[z]	(0.07)	(0.09)	(3.17)
Provider ID: 45	[z]	0.16*	0.12	6.11*
Provider ID: 45	[z]	(0.07)	(0.09)	(2.90)
Provider Id: 52	[z]	-0.06	-0.07	1.46
Provider Id: 52	[z]	(0.05)	(0.07)	(2.42)
Provider Id: 55	[z]	0.38*	0.35*	5.53**
Provider Id: 55	[z]	(0.17)	(0.17)	(2.11)
Provider Id: 56	[z]	0.05	0.01	0.31
Provider Id: 56	[z]	(0.10)	(0.11)	(2.16)
Provider Id: 62	[z]	0.08	0.04	1.86
Provider Id: 62	[z]	(0.07)	(0.09)	(1.94)
Provider Id: 68	[z]	0.08	0.09	2.96
Provider Id: 68	[z]	(0.05)	(0.06)	(1.94)
Provider Id: 82	[z]	0.46	0.44	9.14**
Provider Id: 82	[z]	(0.27)	(0.26)	(3.16)
Provider Id: 83	[z]	0.16*	0.09	6.10*
Provider Id: 83	[z]	(0.07)	(0.09)	(2.76)
Provider Id: 88	[z]	-0.06	-0.06	3.97
Provider Id: 88	[z]	(0.05)	(0.07)	(2.61)
Provider Id: 89	[z]	0.24**	0.21*	4.49*

Variables	Model 1	Model 2	Model 3	Model 4
Provider Id: 89	[z]	(0.09)	(0.10)	(2.08)
Provider Id: 90	[z]	0.16*	0.11	7.25*
Provider Id: 90	[z]	(0.07)	(0.09)	(3.34)
Provider Id: 91	[z]	0.05	0.04	0.38
Provider Id: 91	[z]	(0.08)	(0.09)	(2.15)
Provider Id: 92	[z]	0.18	0.18	3.87*
Provider Id: 92	[z]	(0.10)	(0.10)	(1.82)
Provider Id: 94	[z]	0.54	0.47	5.92*
Provider Id: 94	[z]	(0.28)	(0.29)	(2.40)
Provider Id: 98	[z]	0.07	0.02	0.19
Provider Id: 98	[z]	(0.08)	(0.09)	(2.50)
Provider Id: 99	[z]	0.16*	0.12	6.66*
Provider Id: 99	[z]	(0.07)	(0.08)	(2.86)
Provider Id: 101	[z]	-0.06	-0.01	5.13
Provider Id: 101	[z]	(0.05)	(0.06)	(2.67)
Provider Id: 105	[z]	-0.06	-0.10	1.14
Provider Id: 105	[z]	(0.05)	(0.07)	(2.58)
Provider Id: 107	[z]	-0.02	-0.03	0.49
Provider Id: 107	[z]	(0.07)	(0.08)	(2.22)
Provider Id: 111	[z]	0.16*	0.09	5.63*
Provider Id: 111	[z]	(0.07)	(0.09)	(2.77)
Provider Id: 112	[z]	-0.06	-0.10	0.31

Variables	Model 1	Model 2	Model 3	Model 4
Provider Id: 112	[z]			
		(0.05)	(0.07)	(2.65)
Provider Id: 113	[z]			
		0.16*	0.11	6.50*
Provider Id: 113	[z]			
		(0.07)	(0.09)	(3.05)
Provider Id: 120	[z]			
		0.16*	0.14	6.40*
Provider Id: 120	[z]			
		(0.07)	(0.08)	(2.94)
Provider Id: 121	[z]			
		-0.06	-0.07	0.23
Provider Id: 121	[z]			
		(0.05)	(0.07)	(2.17)
Provider Id: 122	[z]			
		0.16*	0.15	8.08**
Provider Id: 122	[z]			
		(0.07)	(0.09)	(3.02)
Provider Id: 124	[z]			
		-0.06	-0.08	0.84
Provider Id: 124	[z]			
		(0.05)	(0.07)	(2.16)
Provider Id: 125	[z]			
		0.16*	0.14	7.52*
Provider Id: 125	[z]			
		(0.07)	(0.09)	(3.06)
N				
	421	421	421	421
Constant				
	-3.29e-16	-0.16*	-0.07	-9.07*
Constant				
	7.21e-10			
School variance constant				
	0.30	0.01	0.01	-
School variance residual				
	0.25	0.02	0.02	-

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are clustered at school level for Model 1, Model 2 and Model 3. Model 4 is Firthlogit. Standard errors are presented within parathesis.

Source: ILR and survey. Base: All parents/carers. [z] represents not applicable.

Table A 6: Regression analysis results for secondary outcome (progression to any further course)

Variables	Model 1	Model 2
Treatment	0.12	0.76
Treatment	(0.76)	(0.68)
Provider Id: 3	[z]	0.00
Provider Id: 3	[z]	[x]
Provider Id: 21	[z]	0.00
Provider Id: 21	[z]	[x]
Provider Id: 24	[z]	-0.06
Provider Id: 24	[z]	(0.88)
Provider Id: 38	[z]	0.00
Provider Id: 38	[z]	[x]
Provider Id: 41	[z]	0.00
Provider Id: 41	[z]	[x]
Provider Id: 45	[z]	0.00
Provider Id: 45	[z]	[x]
Provider Id: 52	[z]	0.00
Provider Id: 52	[z]	[x]
Provider Id: 55	[z]	-1.52
Provider Id: 55	[z]	(1.12)
Provider Id: 56	[z]	-0.67
Provider Id: 56	[z]	(1.25)

Variables	Model 1	Model 2
Provider Id: 62	[z]	0.77
Provider Id: 62	[z]	(1.01)
Provider Id: 68	[z]	0.00
Provider Id: 68	[z]	[x]
Provider Id: 82	[z]	0.00
Provider Id: 68	[z]	[x]
Provider Id: 83	[z]	2.28**
Provider Id: 83	[z]	(0.79)
Provider Id: 88	[z]	0.00
Provider Id: 88	[z]	[x]
Provider Id: 89	[z]	0.09
Provider Id: 89	[z]	(1.18)
Provider Id: 90	[z]	0.00
Provider Id: 90	[z]	[x]
Provider Id: 91	[z]	-2.35**
Provider Id: 91	[z]	(0.89)
Provider Id: 92	[z]	0.00
Provider Id: 92	[z]	[x]
Provider Id: 94	[z]	-1.60
Provider Id: 94	[z]	(1.07)
Provider Id: 98	[z]	-0.21
Provider Id: 98	[z]	(0.77)

Variables	Model 1	Model 2
Provider Id: 99	[z]	0.00
Provider Id: 99	[z]	[x]
Provider Id: 101	[z]	0.00
Provider Id: 101	[z]	[x]
Provider Id: 105	[z]	0.00
Provider Id: 105	[z]	[x]
Provider Id: 107	[z]	0.00
Provider Id: 107	[z]	[x]
Provider Id: 111	[z]	-0.41
Provider Id: 111	[z]	(1.25)
Provider Id: 112	[z]	0.00
Provider Id: 112	[z]	[x]
Provider Id: 113	[z]	0.00
Provider Id: 113	[z]	[x]
Provider Id: 120	[z]	0.05
Provider Id: 120	[z]	(0.74)
Provider Id: 121	[z]	0.00
Provider Id: 121	[z]	[x]
Provider Id: 122	[z]	0.00
Provider Id: 122	[z]	[x]
Provider Id: 124	[z]	0.00
Provider Id: 124	[z]	[x]

Variables	Model 1	Model 2
Provider Id: 125	[z]	0.00
Provider Id: 125	[z]	(0.51)
N	421	421
Constant	-3.77	-1.52*
Constant	(0.76)	(0.76)
School variance	6.05*	0.55
School variance	(2.57)	(0.54)

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are clustered at school level. Standard errors presented in parenthesis.

Source: ILR. Base: All parents/carers. [z] represents not applicable and [x] not available.

Table A 7: Regression analysis results for secondary outcome (confidence and child's maths attainment)

Variables	Composite confidence	Overall confidence	Child math score
Treatment	0.24	-0.03	-0.42
Treatment	(0.17)	(0.24)	(0.62)
Composite confidence (baseline)	0.72***	[z]	[z]
Composite confidence (baseline)	(0.18)	[z]	[z]
Overall confidence (baseline)	[z]	0.23*	[z]
Overall confidence (baseline)	[z]	(0.09)	[z]
Child maths score 2023-24	[z]	[z]	3.45***
Child maths score 2023-24	[z]	[z]	(0.47)

Variables	Composite confidence	Overall confidence	Child math score
Male (reference: female)	-0.24	-0.72*	[z]
Male (reference: female)	(0.55)	(0.31)	[z]
Ill health (reference: no)	0.00	0.00	[z]
Ill health (reference: no)	[x]	[x]	[z]
Age	-0.01	-0.00	[z]
Age	(0.02)	(0.02)	[z]
Most deprived (reference: no)	-0.11	0.33	[z]
Most deprived (reference: no)	(0.31)	(0.30)	[z]
White (reference: other groups)	0.05	0.30	[z]
White (reference: other groups)	(0.28)	(0.22)	[z]
Employed (reference: no)	0.20	0.03	[z]
Employed (reference: no)	(0.20)	(0.31)	[z]
Provider Id: 3	0.00	0.00	0.00
Provider Id: 3	[x]	[x]	[x]
Provider Id: 21	[z]	[z]	0.00
Provider Id: 21	[z]	[z]	[x]
Provider Id: 24	0.32	-0.50*	-1.33
Provider Id: 24	(0.23)	(0.24)	(1.26)
Provider Id: 38	0.53	0.49	0.00
Provider Id: 38	(0.36)	(0.39)	[x]
Provider Id: 41	0.33	-1.73***	0.00
Provider Id: 41	(0.35)	(0.50)	[x]

Variables	Composite confidence	Overall confidence	Child math score
Provider Id: 45	-0.02	0.56	0.00
Provider Id: 45	(0.28)	(0.45)	[x]
Provider Id: 52	[z]	[z]	0.68
Provider Id: 52	[z]	[z]	(0.94)
Provider Id: 55	[z]	[z]	-0.25
Provider Id: 55	[z]	[z]	(1.28)
Provider Id: 56	0.06	-1.66*	-2.17
Provider Id: 56	(0.42)	(0.77)	(1.12)
Provider Id: 62	0.25	-1.03***	-0.62
Provider Id: 62	(0.30)	(0.22)	(1.48)
Provider Id: 68	0.08	-0.35	-2.32*
Provider Id: 68	(0.28)	(0.38)	(0.93)
Provider Id: 82	[z]	[z]	-3.10
Provider Id: 82	[z]	[z]	(1.67)
Provider Id: 83	[z]	[z]	0.00
Provider Id: 83	[z]	[z]	[x]
Provider Id: 88	[z]	[z]	0.00
Provider Id: 88	[z]	[z]	[x]
Provider Id: 89	0.14	-2.95***	-1.36
Provider Id: 89	(0.39)	(0.22)	(1.10)
Provider Id: 90	[z]	[z]	0.00
Provider Id: 90	[z]	[z]	[x]

Variables	Composite confidence	Overall confidence	Child math score
Provider Id: 91	0.84*	-0.32	0.31
Provider Id: 91	(0.33)	(0.21)	(1.16)
Provider Id: 92	[z]	[z]	-0.50
Provider Id: 92	[z]	[z]	(0.93)
Provider Id: 94	0.32	-0.18	0.30
Provider Id: 94	(0.38)	(0.25)	(1.03)
Provider Id: 98	0.11	-0.41	-3.00*
Provider Id: 98	(0.42)	(0.36)	(1.32)
Provider Id: 99	1.78***	-0.09	0.39
Provider Id: 99	(0.37)	(0.40)	(1.13)
Provider Id: 101	[z]	[z]	0.00
Provider Id: 101	[z]	[z]	[x]
Provider Id: 105	0.10	-0.06	-0.54
Provider Id: 105	(0.33)	(0.18)	(0.93)
Provider Id: 107	-0.41	-0.28	-0.82
Provider Id: 107	(0.43)	(0.42)	(1.14)
Provider Id: 111	[z]	[z]	0.06
Provider Id: 111	[z]	[z]	(1.14)
Provider Id: 112	[z]	[z]	0.00
Provider Id: 112	[z]	[z]	[x]
Provider Id: 113	[z]	[z]	-2.07
Provider Id: 113	[z]	[z]	(1.12)

Variables	Composite confidence	Overall confidence	Child math score
Provider Id: 120	0.11	-0.94***	-1.43
Provider Id: 120	(0.28)	(0.18)	(1.12)
Provider Id: 121	1.57	0.10	-1.44
Provider Id: 121	(0.90)	(0.50)	(0.93)
Provider Id: 122	0.14	0.42	0.00
Provider Id: 122	(0.39)	(0.50)	[x]
Provider Id: 124	-0.51	-0.46	1.25
Provider Id: 124	(0.46)	(0.28)	(1.37)
Provider Id: 125	0.39	-0.58	-0.27
Provider Id: 125	(0.67)	(0.36)	(1.12)
N	46	46	275
Constant	1.25	2.55**	-0.06
Constant	(1.05)	(0.95)	(1.14)
School variance (constant)	3.59E-09	3.10e-14	1.56e-33
School variance (residual)	0.16	0.12	1.37e-33

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are clustered at school level. Standard errors presented in parenthesis.

Source: ILR, baseline and endline survey. Base: All survey respondents. [z] represents not applicable.

Table A 8: Sensitivity analysis for post-randomisation recruitment

Variables	Primary outcome: Progression to any further maths course
Treatment	0.16**
Treatment	(0.06)
Male (reference: female)	-0.08*
Male (reference: female)	(0.03)
White (reference: other groups)	-0.02
White (reference: other groups)	(0.04)
Employed (reference: no)	0.00
Employed (reference: no)	(0.02)
Ill health (reference: no)	0.04
Ill health (reference: no)	(0.04)
Age	0
Age	0
Most deprived (reference: no)	-0.02
Most deprived (reference: no)	(0.03)
Provider Id: 3	0.00
Provider Id: 3	[x]
Provider Id: 21	0.14
Provider Id: 21	(0.08)
Provider Id: 24	0.08
Provider Id: 24	(0.08)

Variables	Primary outcome: Progression to any further maths course
Provider Id: 38	0.10
Provider Id: 38	(0.06)
Provider Id: 41	0.10
Provider Id: 41	(0.09)
Provider Id: 45	0.11
Provider Id: 45	(0.09)
Provider Id: 52	-0.06
Provider Id: 52	(0.07)
Provider Id: 55	0.35*
Provider Id: 55	(0.18)
Provider Id: 56	0.01
Provider Id: 56	(0.10)
Provider Id: 62	-0.01
Provider Id: 62	(0.10)
Provider Id: 68	0.10
Provider Id: 68	(0.06)
Provider Id: 82	0.37
Provider Id: 82	(0.23)
Provider Id: 83	0.08
Provider Id: 83	(0.09)
Provider Id: 88	-0.05

Variables	Primary outcome: Progression to any further maths course
Provider Id: 88	
	(0.06)
Provider Id: 89	
	0.20*
Provider Id: 89	
	(0.10)
Provider Id: 90	
	0.15
Provider Id: 90	
	(0.08)
Provider Id: 91	
	0.03
Provider Id: 91	
	(0.08)
Provider Id: 92	
	0.18
Provider Id: 92	
	(0.10)
Provider Id: 94	
	0.47
Provider Id: 94	
	(0.29)
Provider Id: 98	
	0.01
Provider Id: 98	
	(0.09)
Provider Id: 99	
	0.11
Provider Id: 99	
	(0.08)
Provider Id: 101	
	-0.01
Provider Id: 101	
	(0.06)
Provider Id: 105	
	-0.09
Provider Id: 105	
	(0.07)
Provider Id: 107	
	-0.03
Provider Id: 107	
	(0.07)

Variables	Primary outcome: Progression to any further maths course
Provider Id: 111	0.09
Provider Id: 111	(0.09)
Provider Id: 112	-0.10
Provider Id: 112	(0.07)
Provider Id: 113	0.11
Provider Id: 113	(0.08)
Provider Id: 120	0.13
Provider Id: 120	(0.08)
Provider Id: 121	-0.07
Provider Id: 121	(0.07)
Provider Id: 122	0.13
Provider Id: 122	(0.09)
Provider Id: 124	-0.08
Provider Id: 124	(0.07)
Provider Id: 125	0.13
Provider Id: 125	(0.08)
N	403
constant	-0.06
constant	(0.10)
School Variance (constant)	0.01
School Variance (constant)	(0.00)

Variables	Primary outcome: Progression to any further maths course
School Variance (residual)	0.02
School Variance (residual)	(0.00)

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are clustered at school level. Standard errors presented in parenthesis.

Source: ILR and survey. Base: All parents/carers recruited prior to randomisation.

Table A 9: Regression analysis results for interaction effects for primary outcome

Variables	Sex	White ethnic group	Employed	Ill health	Age	Deprivation
Treatment	0.28***	0.20**	0.23**	0.22***	0.12	0.19**
Treatment	(0.07)	(0.06)	(0.07)	(0.06)	(0.09)	(0.07)
Male (reference: female)	-0.02	-0.06*	-0.07*	-0.07*	-0.07**	-0.08*
Male (reference: female)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
White (reference: other groups)	0.03	-0.00	0.02	0.03	0.02	0.03
White (reference: other groups)	(0.03)	(0.02)	(0.04)	(0.04)	(0.03)	(0.04)
Employed (reference: no)	-0.03	-0.02	-0.01	-0.02	-0.02	-0.02
Employed (reference: no)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)

Variables	Sex	White ethnic group	Employed	Ill health	Age	Deprivation
Ill health (reference: no)	0.04	0.03	0.04	0.00	0.05	0.05
Ill health (reference: no)	(0.04)	(0.03)	(0.04)	(0.02)	(0.04)	(0.03)
Age	0.00	0.00	0.00	0.00	0.00	0.00
Age	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Most deprived (reference: no)	-0.01	-0.02	-0.02	-0.02	-0.02	0.00
Most deprived (reference: no)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)
Treatment*male	-0.06	[z]	[z]	[z]	[z]	[z]
Treatment*male	(0.05)	[z]	[z]	[z]	[z]	[z]
Treatment*white ethnicity	[z]	0.05	[z]	[z]	[z]	[z]
Treatment*white ethnicity	[z]	(0.06)	[z]	[z]	[z]	[z]
treatment*employed	[z]	[z]	-0.02	[z]	[z]	[z]
treatment*employed	[z]	[z]	(0.05)	[z]	[z]	[z]
treatment*ill health	[z]	[z]	[z]	0.04	[z]	[z]
treatment*ill health	[z]	[z]	[z]	(0.07)	[z]	[z]
treatment*age	[z]	[z]	[z]	[z]	0.00	[z]
treatment*age	[z]	[z]	[z]	[z]	(0.00)	[z]
treatment*most deprived	[z]	[z]	[z]	[z]	[z]	-0.03

Variables	Sex	White ethnic group	Employed	Ill health	Age	Deprivation
treatment*most deprived	[z]	[z]	[z]	[z]	[z]	(0.04)
Provider Id: 3	0.00	0.00	0.00	0.00	0.00	0.00
Provider Id: 3	[x]	[x]	[x]	[x]	[x]	[x]
Provider Id: 21	0.13	0.12	0.13	0.12	0.15	0.15
Provider Id: 21	(0.08)	(0.08)	(0.09)	(0.08)	(0.09)	(0.08)
Provider Id: 24	0.10	0.08	0.09	0.09	0.08	0.08
Provider Id: 24	(0.07)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Provider Id: 38	0.13*	0.11	0.11	0.11	0.10	0.10
Provider Id: 38	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Provider Id: 41	0.12	0.12	0.11	0.11	0.11	0.11
Provider Id: 41	(0.08)	(0.08)	(0.09)	(0.08)	(0.09)	(0.09)
Provider Id: 45	0.13	0.12	0.12	0.11	0.12	0.12
Provider Id: 45	(0.08)	(0.08)	(0.09)	(0.08)	(0.09)	(0.08)
Provider Id: 52	-0.04	-0.07	-0.06	-0.07	-0.08	-0.08
Provider Id: 52	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Provider Id: 55	0.37*	0.35*	0.36*	0.36*	0.35*	0.35*
Provider Id: 55	(0.16)	(0.17)	(0.16)	(0.17)	(0.17)	(0.17)
Provider Id: 56	0.02	0.01	0.02	0.01	0.01	0.01
Provider Id: 56	(0.11)	(0.10)	(0.11)	(0.10)	(0.11)	(0.11)
Provider Id: 62	0.04	0.05	0.05	0.05	0.04	0.04
Provider Id: 62	(0.08)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)

Variables	Sex	White ethnic group	Employed	Ill health	Age	Deprivation
Provider Id: 68	0.12*	0.10	0.10	0.09	0.09	0.09
Provider Id: 68	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Provider Id: 82	0.43	0.42	0.44	0.43	0.44	0.45
Provider Id: 82	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)	(0.25)
Provider Id: 83	0.14	0.09	0.11	0.11	0.09	0.08
Provider Id: 83	(0.08)	(0.08)	(0.09)	(0.08)	(0.09)	(0.09)
Provider Id: 88	-0.00	-0.10	-0.03	-0.08	-0.06	-0.05
Provider Id: 88	(0.05)	(0.07)	(0.07)	(0.07)	(0.07)	(0.06)
Provider Id: 89	0.23**	0.22*	0.22*	0.22*	0.21*	0.21*
Provider Id: 89	(0.09)	(0.09)	(0.10)	(0.09)	(0.10)	(0.10)
Provider Id: 90	0.14	0.12	0.11	0.11	0.11	0.11
Provider Id: 90	(0.08)	(0.08)	(0.09)	(0.08)	(0.09)	(0.08)
Provider Id: 91	0.04	0.04	0.04	0.04	0.04	0.04
Provider Id: 91	(0.08)	(0.08)	(0.09)	(0.08)	(0.09)	(0.08)
Provider Id: 92	0.19*	0.19*	0.18	0.19*	0.18	0.18
Provider Id: 92	(0.09)	(0.10)	(0.10)	(0.09)	(0.10)	(0.10)
Provider Id: 94	0.48	0.47	0.47	0.47	0.47	0.47
Provider Id: 94	(0.27)	(0.28)	(0.28)	(0.28)	(0.29)	(0.28)
Provider Id: 98	0.03	0.02	0.03	0.03	0.02	0.02
Provider Id: 98	(0.08)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Provider Id: 99	0.13	0.13	0.12	0.12	0.13	0.12

Variables	Sex	White ethnic group	Employed	Ill health	Age	Deprivation
Provider Id: 99	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Provider Id: 101	0.04	0.02	0.01	0.03	-0.01	-0.01
Provider Id: 101	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Provider Id: 105	-0.11	-0.11	-0.12	-0.09	-0.10	-0.10
Provider Id: 105	(0.06)	(0.07)	(0.08)	(0.07)	(0.07)	(0.07)
Provider Id: 107	-0.01	-0.02	-0.02	-0.02	-0.03	-0.03
Provider Id: 107	(0.07)	(0.07)	(0.08)	(0.07)	(0.08)	(0.08)
Provider Id: 111	0.12	0.10	0.10	0.10	0.10	0.10
Provider Id: 111	(0.08)	(0.08)	(0.09)	(0.08)	(0.09)	(0.09)
Provider Id: 112	-0.09	-0.10	-0.07	-0.09	-0.10	-0.10
Provider Id: 112	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Provider Id: 113	0.13	0.11	0.11	0.10	0.11	0.12
Provider Id: 113	(0.08)	(0.08)	(0.09)	(0.08)	(0.09)	(0.08)
Provider Id: 120	0.16*	0.14	0.16	0.15	0.14	0.13
Provider Id: 120	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Provider Id: 121	-0.06	-0.06	-0.07	-0.07	-0.07	-0.07
Provider Id: 121	(0.06)	(0.06)	(0.07)	(0.06)	(0.07)	(0.07)
Provider Id: 122	0.13	0.13	0.14	0.14	0.15	0.15
Provider Id: 122	(0.08)	(0.08)	(0.09)	(0.08)	(0.09)	(0.08)
Provider Id: 124	-0.07	-0.08	-0.07	-0.07	-0.08	-0.08
Provider Id: 124	(0.08)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)

Variables	Sex	White ethnic group	Employed	Ill health	Age	Deprivation
Provider Id: 125	0.13	0.13	0.13	0.13	0.14	0.15
Provider Id: 125	(0.08)	(0.08)	(0.09)	(0.08)	(0.09)	(0.08)
N	421	421	421	421	421	421
Constant	-0.17*	-0.11	-0.11	-0.12	-0.06	-0.11
Constant	(0.09)	(0.10)	(0.11)	(0.10)	(0.09)	(0.10)
School variance constant	0.01	0.01	0.01	0.01	0.01	0.01
School variance constant	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
School variance residual	0.02	0.02	0.02	0.02	0.02	0.02
School variance residual	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are clustered at school level. Standard errors presented in parenthesis.

Source: ILR and survey. Base: All parents/carers. [z] represents not applicable.

Table A 10: CACE adjusted regression analysis results

Variables	Primary outcome: Progression to any further maths course	Secondary outcome: Progression to any further course	Secondary outcome: Child's math score
CACE estimate	0.63***	-0.11	-0.14
CACE estimate	(0.17)	(0.24)	(0.28)
Male (reference: female)	-0.05	-0.03	0.18
Male (reference: female)	(0.17)	(0.20)	(0.42)
White (reference: other groups)	0.01	0.05	-0.04
White (reference: other groups)	(0.04)	(0.06)	(0.09)
Employed (reference: no)	-0.03	0.00	0.05
Employed (reference: no)	(0.04)	(0.05)	(0.09)
Ill health (reference: no)	0.07	0.14	-0.10
Ill health (reference: no)	(0.06)	(0.11)	(0.14)
Age	0	-0.00	0.00
Age	0	(0.00)	(0.00)
Most deprived (reference: no)	-0.01	0.00	-0.09

Variables	Primary outcome: Progression to any further maths course	Secondary outcome: Progression to any further course	Secondary outcome: Child's math score
Most deprived (reference: no)			
	(0.02)	(0.03)	(0.05)
Child outcomes (2023-24)	[z]	[z]	
			0.55***
Child outcomes (2023-24)	[z]	[z]	
			(0.05)
Provider Id: 3	0.00	0.00	0.00
Provider Id: 3	[x]	[x]	[x]
Provider Id: 21	0.17*	-0.23***	0.00
Provider Id: 21	(0.07)	(0.07)	[x]
Provider Id: 24	0.21**	-0.14	-0.19
Provider Id: 24	(0.08)	(0.11)	(0.18)
Provider Id: 38	0.16**	-0.29***	0.00
Provider Id: 38	(0.05)	(0.04)	[x]
Provider Id: 41	0.21*	-0.31*	0.00
Provider Id: 41	(0.09)	(0.12)	[x]
Provider Id: 45	0.21*	-0.29**	0.00
Provider Id: 45	(0.09)	(0.10)	[x]
Provider Id: 52	-0.15*	-0.28***	0.00
Provider Id: 52	(0.06)	(0.07)	(0.12)
Provider Id: 55	0.39**	-0.31***	-0.06

Variables	Primary outcome: Progression to any further maths course	Secondary outcome: Progression to any further course	Secondary outcome: Child's math score
Provider Id: 55	(0.14)	(0.07)	(0.16)
Provider Id: 56	0.03	-0.19	-0.34*
Provider Id: 56	(0.13)	(0.13)	(0.16)
Provider Id: 62	0.02	0.13	-0.14
Provider Id: 62	(0.12)	(0.21)	(0.17)
Provider Id: 68	0.34***	-0.32***	-0.42*
Provider Id: 68	(0.08)	(0.08)	(0.17)
Provider Id: 82	0.36	-0.27**	-0.53*
Provider Id: 82	(0.20)	(0.09)	(0.24)
Provider Id: 83	0.21*	0.21*	0.00
Provider Id: 83	(0.09)	(0.10)	[x]
Provider Id: 88	0.19*	-0.19	-0.02
Provider Id: 88	(0.09)	(0.10)	(0.19)
Provider Id: 89	0.31*	-0.06	-0.21
Provider Id: 89	(0.12)	(0.15)	(0.19)
Provider Id: 90	0.22*	-0.35**	-0.46**
Provider Id: 90	(0.09)	(0.11)	(0.17)
Provider Id: 91	0.18*	-0.31**	-0.01
Provider Id: 91	(0.08)	(0.10)	(0.18)
Provider Id: 92	0.24***	-0.31***	-0.16

Variables	Primary outcome: Progression to any further maths course	Secondary outcome: Progression to any further course	Secondary outcome: Child's math score
Provider Id: 92	(0.07)	(0.06)	(0.15)
Provider Id: 94	0.38*	-0.31***	-0.02
Provider Id: 94	(0.16)	(0.07)	(0.14)
Provider Id: 98	0.12	-0.09	-0.48*
Provider Id: 98	(0.11)	(0.12)	(0.20)
Provider Id: 99	0.19*	-0.28**	0.03
Provider Id: 99	(0.08)	(0.09)	(0.18)
Provider Id: 101	0.02	-0.21***	0.00
Provider Id: 101	(0.05)	(0.04)	[x]
Provider Id: 105	-0.07	-0.38***	-0.13
Provider Id: 105	(0.07)	(0.09)	(0.17)
Provider Id: 107	0.17*	-0.30***	-0.21
Provider Id: 107	(0.08)	(0.08)	(0.18)
Provider Id: 111	0.19*	-0.21	-0.05
Provider Id: 111	(0.09)	(0.15)	(0.19)
Provider Id: 112	0.04	-0.38***	0.00
Provider Id: 112	(0.07)	(0.06)	[x]
Provider Id: 113	0.19*	-0.32***	-0.38*
Provider Id: 113	(0.09)	(0.09)	(0.18)
Provider Id: 120	0.21**	-0.12	-0.19

Variables	Primary outcome: Progression to any further maths course	Secondary outcome: Progression to any further course	Secondary outcome: Child's math score
Provider Id: 120	(0.08)	(0.08)	(0.16)
Provider Id: 121	-0.16*	-0.35***	-0.24
Provider Id: 121	(0.07)	(0.08)	(0.15)
Provider Id: 122	0.18*	-0.23**	0.09
Provider Id: 122	(0.07)	(0.07)	(0.16)
Provider Id: 124	-0.06	-0.33***	0.13
Provider Id: 124	(0.06)	(0.08)	(0.15)
Provider Id: 125	0.18*	-0.21**	-0.12
Provider Id: 125	(0.08)	(0.08)	(0.17)
N	421	421	283
constant	-0.30*	0.47*	0.52
constant	(0.14)	(0.22)	(0.28)

Note: Significance Levels: * p < 0.05, ** p < 0.01, *** p < 0.001. Standard errors are clustered at school level. Standard errors in parenthesis.

Source: ILR and MI. Base: All parents/carers. [z] represents not applicable.

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