Department for Education

Adult numeracy randomised controlled trials: Embedding maths in health and social care

Implementation and process evaluation

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Contents

List of tables

Executive summary

Key findings

The Embedded Maths intervention was developed as part of the Department for Education (DfE)'s Adult Numeracy Trials, aimed at building the evidence base for what works to improve numeracy skills in adults. It supported maths learning by expanding on the Level 1 maths concepts in the curriculum of Health and Social Care (H&SC) Level 2 vocational qualifications, aligned to tasks undertaken in H&SC jobs. The intervention re-worked the Level 2 H&SC curriculum[1] to incorporate 18 guided learning hours (GLH) of H&SC-relevant Level 1 maths content, covering approximately 60% of the Functional Skills Qualification (FSQ) Level 1 maths curriculum while also delivering in full to the H&SC Level 2 curriculum. This meant that learners on the H&SC courses had the opportunity to enhance and reinforce their maths skills in naturally occurring, relevant work-related contexts.

The original intention was to evaluate this intervention though a randomised controlled trial (RCT) of approximately 60 providers. However, various challenges in the recruitment and retention of adult education providers meant neither this, or a smaller, pilot trial could be delivered. Of 27 providers that originally signed up, 12 registered for training, 6 partially or fully trained tutors and 2 providers proceeded to deliver the intervention. Rather than stop the trial at this stage, the Department agreed to take the evaluation forward as a small-scale, non-randomised descriptive implementation and process evaluation (IPE). The rationale was twofold. First, it meant information could be captured about the intervention and tutors' and learners' response to it. Second, it would provide understanding of the practicalities and challenges of running RCTs in the adult education sector, which was one of the Adult Numeracy RCT programme's aims. The evaluation was therefore re-designed with 2 objectives: a) to maximise learning about attitudes towards the intervention and the RCT itself from the 2 participating providers; and b) to understand why other providers dropped out between sign-up and delivery, and gauge whether the problem was primarily the intervention or other factors. The aim was to inform future attempts to run trials using embedded maths in vocational courses.

The key findings from the research are:

- The Embedded Maths intervention has potential to improve non-maths tutors' confidence in teaching maths. In particular:
    - The 2 H&SC tutors who successfully delivered the intervention reported improved confidence in covering the additional maths content due to its

[1] Although several awarding bodies offer this qualification, the intervention was applicable to all of them.

real-life application to H&SC roles. They were also positive about the effect of the Embedded Maths intervention on their own practice.

    - These 2 tutors attended all pre-programme training and both were positive about the content, saying they found it flexible and helpful.

- These 2 tutors made only minor adaptions to the intervention when delivering it in the classroom, focussing on improving accessibility. In future, these adaptions can be added to the intervention design.

- The intervention has the potential to improve learner capability and confidence in using maths in the H&SC workplace. Learner attendance at the Embedded Maths sessions was high and learners reported improvements in confidence with using maths at work.

- Some H&SC learners were already confident in maths and/or had a Level 2 maths qualification, which suggested the value of the vocationally-relevant approach for a range of H&SC adult learners.

- It was difficult to establish the specific contribution of the Embedded Maths intervention to H&SC learners' perceived outcomes as many learners were also engaged in other maths courses with their provider. However, these courses did not focus on maths skills in H&SC jobs. This means the increase in learners' confidence using maths in the workplace is promising in terms of the effect of Embedded Maths. A future 3-arm trial could explore the extent to which completing a FSQ Level 1 maths qualification alongside the Embedded Maths course affects learner outcomes, compared to completing Embedded Maths on its own and to business as usual (BAU) H&SC courses.

- While learners taking other maths courses alongside the Embedded Maths H&SC course could not differentiate particularly between the maths content in them both, they indicated that overall the courses worked well together.

- Some H&SC learners' maths skills were higher than expected of the Adult Numeracy Trials' target population; in one participating provider, learners were more highly qualified in maths due to qualifications gained in home countries. Because the intervention could not apply maths-specific eligibility criteria for practical and ethical issues[2], some learners may already have had the maths skills being taught. This could be minimised by adding maths-ability eligibility

[2]H&SC embedded maths content ran through the course, so could not be restricted to only those leaners with weak numeracy skills. Leaners signed up to the H&SC course based on criteria that did not include maths qualifications; adding these in post-hoc would have excluded some learners from provision that they had already been accepted onto.

criteria for the H&SC course or targeting specific classes of vocational learners. However, the feasibility of recruiting sufficient learners with these extra criteria would need to be tested.

- Provider drop out was driven by a combination of: low H&SC tutor willingness or confidence in their ability to engage with and teach the H&SC-related maths content; the volume and structure of the tutor training which some found off-putting; and organisational confusion around the demands of taking part in a RCT on adult numeracy. The necessary delivery timescales also meant starting the first phase of recruitment in parallel with the finalisation of training and curriculum design. As a result, questions about what allocation to the treatment group would entail could not be answered in detail early in the recruitment period. Additionally, and outside of issues related to the trial and intervention design, some providers were simply unable to recruit enough learners to the H&SC course to deliver it.

While some of the reasons for provider drop out could be addressed in future research, the issue of low confidence (sometimes presenting as maths anxiety) in H&SC tutors when asked to teach H&SC-related maths is a more difficult challenge. It is a noteworthy point for future research into embedded approaches to consider. Earlier engagement with H&SC tutors ahead of delivering the Embedded Maths content might help to address tutor withdrawal in future research. Offering voluntary enrolment of tutors and a more flexible training schedule may also help. With some adjustment, this intervention would appear to have value and be suitable for further exploration.

Background and rationale

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

The original intention was to evaluate this intervention though a RCT of approximately 60 providers. However, various challenges in the recruitment and retention of adult education providers meant neither this, or a smaller, pilot trial, could be delivered. Of 27 providers that originally signed up, 12 registered for training, 6 had partially or fully trained tutors and 2 providers proceeded to deliver the intervention. Rather than stop the

trial at this stage, the Department agreed to take the evaluation forward as a small-scale, non-randomised descriptive IPE. The rationale was to capture information about the intervention, and increasing understanding of the practicalities and challenges of running RCTs in the adult education sector, which was one of the Adult Numeracy RCT programme's aims. The evaluation was therefore re-designed with 2 objectives: a) to maximise learning about attitudes towards the intervention and the RCT itself from the 2 participating providers; and b) to understand why other providers dropped out between sign-up and delivery, and gauge whether the problem was primarily the intervention or other factors. The aim was to inform future attempts to run trials using embedded maths in vocational courses.

The Embedded Maths intervention was different to other interventions tested as part of the DfE Adult Numeracy Trials in that it did not directly target maths learners. Instead, it integrated ('embedded') vocationally-specific maths content into a vocational course. The product developers based the intervention on the premise that adult learners are motivated to take vocational courses to progress into work but are less keen to return to study maths (Social Mobility Commission, 2021). Additionally, prior experiences of failure with maths can lead to anxiety and negative attitudes to the subject (Ryan & Fitzmaurice, 2017). This anxiety may prevent adults from engaging in maths learning, in turn limiting their potential progression and employment prospects. Many providers routinely offer maths qualifications such as Functional Skills maths (up to and including Level 2), based on an initial assessment, to support learners' vocational studies and workplace readiness. Improved maths confidence and competency can support improved labour market outcomes such as better employment and progression opportunities for learners, as well as contributing to a more skilled workforce in H&SC. The vocational focus for this intervention was H&SC at Level 2, which is a popular course among adults[3]. H&SC currently has a high number of job vacancies available and represents a government priority sector (Department for Business and Trade, 2025).

Intervention

The Embedded Maths intervention aimed to improve the confidence of adults undertaking a Level 2 H&SC vocational course to engage with Level 1 maths concepts. To achieve this, it drew on the implicit use of maths within the H&SC curriculum, embedding up to 60% of the FSQ Level 1 maths curricula into a Level 2 H&SC course. The maths content was derived from the numeracy and problem-solving skills required for the H&SC course which reflects practices in the workplace. For example, Embedded Maths topics included dosage calculations and clinical measurements.

[3] DfE data shows over 506,410 adults learning in Health, Public Services and Care courses in 2023/24, that is, around 19% of enrolments across 16 reported subject areas. Department for Education (2024) Further education and skills: data tables

The intervention included bespoke training for the H&SC tutors which focused on improving their maths subject knowledge and confidence to teach maths within the H&SC curriculum. The intervention used maths concepts in the H&SC curriculum and jobs that were aligned with Functional Skills Qualification (FSQ) Level 1 maths. This approach aimed to make maths more relevant and applicable to learners.

The intervention consisted of tutors engaging in a comprehensive package of pre-training (10 hours of professional development) that explained the approach and its rationale. The intervention provided a scheme of work and accompanying 12 x 1.5-hour lessons for tutors to deliver to learners. Tutors also undertook continuing professional development (CPD) in the form of weekly or fortnightly (depending on course schedules) reflective practice sessions led by expert practitioners (12 x 2 hours sessions).

To explore delivery of the intervention, the IPE focused on the following 4 key themes:

- Design and set-up of the trial.
- Tutor experiences of training, support and delivery (including fidelity and challenges).
- Learner experiences, engagement and participation.
- Perceived outcomes and lessons for future delivery.

Methodology and process

This Embedded Maths intervention was originally developed to be evaluated through a larger-scale RCT involving 60 providers. However, due to challenges in recruiting sufficient adult education providers, the evaluation proceeded as a small-scale, non-randomised descriptive, IPE study.

A total of 27 providers submitted full details to express interest in taking part in the intervention to the Managed Service Supplier (MSS), 12 registered for training, 6 had tutors wholly or partially trained, and 2 progressed to delivery during the 2024/25 academic year. The evaluation continued with qualitative work with the remaining 2 providers to understand if the intervention, when delivered, was positively received by tutors and learners. The aim was to inform similar, future research on all aspects of intervention usefulness.

The evaluation was adapted to maximise key points of learning from the 2 providers. It involved predominantly qualitative research (in-depth interviews) with 14 of the 68 learners who completed the intervention, 2 tutors (while 3 tutors were involved in delivery, 1 was not contactable during the evaluation), 3 provider stakeholders and the

MSS. The evaluation also incorporated interviews with 2 providers that had withdrawn. Management information regarding tutor training and learner attendance was analysed.

Following the trial feasibility assessment in June 2023, the first trial protocol was registered in September 2024, followed by the second version in August 2025. Recruitment took place between May and September 2024, with the intervention delivered from September to July 2025. Baseline surveys were conducted September 2024 to January 2025, with IPE fieldwork taking place between June and September 2025.

Findings

The 2 tutors that delivered Embedded Maths were positive about the effect of the Embedded Maths intervention on their practice. One noted improved confidence, while the other reported changing their practice to deliver maths content in a way that was relevant to learners' daily routines and tasks when working in H&SC.

Tutors delivered the Embedded Maths intervention successfully, both face to face and online, and reported that learners positively engaged with the content. Tutors made minor adaptations to extend the duration of delivery and to adjust the language used in the Embedded Maths materials to ensure the intervention was accessible to all learners. These minor deviations did not affect the fidelity of delivery.

Interviews with learners who completed the intervention suggested that engaging in Embedded Maths sessions helped them recognise and build their mathematical capability and view maths more positively. They indicated the sessions helped reduce their maths anxiety and enabled them to approach a greater variety of tasks in the workplace. Learners also provided examples of workplace H&SC tasks involving maths that they could now perform with greater competency. The confidence gained through the course encouraged some learners to consider additional maths qualifications or courses.

In interpreting these findings, it should be noted that learners participating in the intervention from 1 provider generally had higher-level qualifications (Level 2 and above) and higher levels of baseline confidence in maths than anticipated for the Adult Numeracy Trials. Many of the learners at this provider sought to gain UK qualifications to support careers in H&SC in the UK[4,5]. The second provider focused on supporting a single-gender cohort of economically inactive people, many of whom had learning difficulties or health issues; this provider did not share data on prior qualifications for this

[4] To give context for this, an estimated 50,000 people arrived in the UK in 2024/25 and started direct care providing roles in the independent sector, according to figures from Skills for Care: *The size and structure of the adult social care sector and workforce in England - 2025*.
[5] Survey data was not available from the other provider that completed the intervention and therefore data on baseline confidence levels and self-reported qualifications were not available to the evaluators.

group with the evaluation. Given these dynamics, it remains unclear what improvements might have been observed if the intervention had been delivered entirely to the intended target population for the trials.

Additionally, within the 2 providers that delivered the intervention, the evaluation found that learners were also enrolled on other maths courses, and these overlapped with other Adult Numeracy Trials. Of the 68 learners participating in Embedded Maths, 58 were also participating in trials targeting either Functional Skills Qualification in Maths Level 1 or support to prepare for GCSE Maths (see Appendix 9, Table 8). Therefore, reported improvements in maths confidence or competence cannot solely be attributed to the Embedded Maths intervention.

Participating provider stakeholders reported that they were motivated to test the intervention because it offered a good opportunity to access CPD for tutors and would benefit learners who struggle with the maths in the H&SC curriculum.

The 2 providers that delivered the intervention reported that their tutors attended all the pre-programme training and the planned level of ongoing CPD. Provider data indicated that learner attendance at the Embedded Maths sessions was high.

The 2 tutors delivered the intervention with minor adaptations. While the intervention did not specify the provision of catch-up opportunities for learners who missed sessions, future versions should include this to support learners who cannot attend all course sessions. Future iterations could also simplify some of the language within intervention materials. Nonetheless the evidence suggests that concerns around the intensity of the training, lack of provider resources and poor levels of tutor confidence in engaging with the intervention contributed towards large numbers of providers withdrawing from the trial. Earlier engagement with H&SC tutors to provide assurances and improve their confidence around delivering the Embedded Maths content, offering the opportunity for H&SC tutors to volunteer to be involved and a more flexible training schedule or reduced training volume, may address these issues.

Conclusions and recommendations

The Embedded Maths intervention has the potential to improve the confidence of H&SC tutors to teach how maths is applied within H&SC jobs. Learners at the 2 participating providers reported that the intervention built their capability and confidence in using maths in the H&SC workplace. Learners noted improvements in their workplace maths skills including some who were already confident in maths, which demonstrates the value of the vocationally-relevant approach for all students of H&SC.

Recommendations

Embedded Maths is novel and there is limited wider evidence on embedding maths concepts in adult vocational courses. The Embedded Maths intervention tested in this evaluation will require adaptations to improve take-up among providers and to further support tutors and learners to engage with it. Future evaluations could either trial the intervention in isolation from other maths initiatives or to intentionally pair it with additional maths courses. The following recommendations emerged from this research to help address these issues:

- Formally engage with H&SC tutors prior to the Embedded Maths training to understand their levels of maths anxiety and provide adequate assurances about the intervention delivery and content.
- Explore opportunities to reduce and redesign the training and ongoing support time and/or offer greater flexibility to the training to support provider staffing and retention. H&SC tutors' prior experience of teaching maths varies substantially, which means training could be streamlined for those who are more experienced and delivered in full to those with less experience.
- Work with tutors to show how the Embedded Maths intervention can be adapted to both face-to-face and online delivery and identify suitable further adjustments for online learners to better utilise technology.
- Build in additional flexibility to allow time for tutors to fully engage learners who are less familiar the maths content.
- Identify where minor adaptations of content may be needed to reflect different cohorts of learners and make it relatable to their experience of life and work.
- Acknowledge the work and caring needs of the learners and build in effective catch-up resources and opportunities.

Considerations for further research

Future research on Embedded Maths should prioritise increasing provider engagement and reducing tutor resistance, potentially by making participation voluntary and involving tutors directly as part of recruitment activity. Stronger evidence on provider contexts, such as how often other maths courses are delivered alongside H&SC courses, together with better insight into learner motivations and prior maths qualifications, would help identify where the intervention can add most value. A clearer understanding of learner cohorts would support more robust designs, including a potential 3-arm trial comparing Embedded Maths alone, Embedded Maths combined with FSQ Level 1 Maths, and business-as-usual H&SC delivery. Targeting learners based on maths ability could

enhance precision, though the feasibility of recruiting adequate numbers would require testing. Future studies should also broaden outcome measures to include maths attainment, progression to higher-level standalone maths courses and the effects of the intervention on job performance. Expansion into other vocational areas must ensure embedded maths content aligns naturally with real-world tasks, as was achieved for Embedded Maths in H&SC.

Finally, this evaluation 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 findings from an implementation and process evaluation (IPE) of a new intervention, 'Embedding Maths in Health and Social Care (H&SC) Level 2 courses', referred to as 'Embedded Maths' throughout this report. The Embedded Maths intervention aimed to support H&SC tutors to develop new teaching practices that draw out the maths concepts and approaches in H&SC courses to improve maths confidence among adult learners of Level 2 H&SC courses. Originally designed as a randomised controlled trial, recruitment challenges led to a small-scale, non-randomised descriptive IPE involving 2 providers, 3 tutors and 68 learners.

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.

Recruitment challenges meant Embedded Maths could not be tested through a trial. Given the small scale of delivery, a descriptive IPE was deemed more appropriate.

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 (DfE data). This trial sought to contribute evidence on approaches to boosting maths skills by embedding relevant maths content into adult vocational courses.

Evidence suggests that prior experience of failure with maths can lead to anxiety and negative attitudes to the subject (Ryan and Fitzmaurice, 2017). Research conducted in 2023 by the charity National Numeracy and KPMG into the levels of maths anxiety in adults in the UK revealed that 35% of adults say that doing maths makes them feel anxious, while 20% are so fearful it even makes them feel physically sick (KPMG UK, 2023). This anxiety may prevent adults from engaging in maths learning, in turn limiting their potential progression and employment prospects.

While adult learners are reluctant to return to study maths, many are motivated to take vocational courses to access employment (Dalby & Noyes, 2015). The OECD (2020)) recommends that to be effective in overcoming low rates of adult participation in basic skills it is important to tailor 'basic skills content and programmes to vocational contexts'. There is a strong evidence base for embedding language, literacy and numeracy (LLN) into other types of learning or workplace activity, with Lord David Blunkett stating in 2000 that it is often 'the best way to attract learners and maintain their motivation (Blunkett, 2000). An embedded maths approach, also known as an emergent or integrated maths approach, aims to connect maths concepts to real-world contexts and integrate them into various subjects. The National Research and Development Centre (NRDC) for Adult Literacy and Numeracy research (2006)) found 'learners often engage most successfully with scenarios that are 'real' and 'relevant' to their everyday lives and experiences'. The NRDC report found that vocational courses at Level 1 and 2 in which LLN was embedded led to: higher retention and success rates in the vocational subject; learners being more likely to achieve the vocational qualification; and believing that they were better prepared for their work (Casey, et al., 2006).

1.1.3 Rationale

Although existing evidence supports embedding maths within vocational and context-relevant activities, the effectiveness of this approach has not yet been tested in the H&SC sector.

H&SC courses are among the most popular for adult learners; in 2023/24, DfE data indicated that over 506,000 adults were enrolled in Health, Public Services and Care courses, accounting for around 19% of enrolments across the 16 subject areas (Department for Education, n.d.). There is evidence that some H&SC staff lack confidence or competence in applying numeracy to their work (National Numeracy, 2014;

National Numeracy, 2023). Meanwhile the sector continues to experience a high volume of job vacancies and H&SC remains a government priority sector, not only for its role in addressing immediate challenges, but also for its ongoing importance in shaping long-term policy. As highlighted in the Skills White Paper, a skilled workforce in health and adult social care is critical to delivering the Plan for Change and sustaining future economic and social resilience.

H&SC learners who lack Level 1 maths may be signposted by providers to generalised and standalone maths courses with limited relevance to H&SC roles. The Embedded Maths intervention adopted a novel approach by integrating maths within H&SC Level 2 courses. This study aimed to address the lack of evidence on this approach and to generate lessons for future research on adult learning.

1.2 Intervention description

1.2.1 Theory of change

The Embedded Maths intervention aimed to support more effective maths learning among adults enrolled in H&SC courses. The intervention demonstrated how maths is central to the H&SC curriculum and focused on supporting tutors to communicate positive attitudes towards maths. The theory of change (ToC) envisaged that financial resources would support tutor recruitment, initial training and ongoing support (activities). These activities would enable delivery of 12 contextualised H&SC lessons implementing embedded maths teaching approaches (outputs). As a result of training and lesson delivery, tutors and learners would understand the relevance and importance of maths to daily life and overcome negative attitudes and anxieties about maths (change mechanisms).

The goal was for tutors to improve their maths subject knowledge, change their approach to delivery and promote a positive mindset to learners (short-term outcomes). This would lead to increased confidence in their own maths ability with tutors shifting their pedagogy to include embedded and vocational maths in their teaching (medium-term outcomes).

The intended short-term outcomes for learners were that they would identify the maths in the H&SC curriculum and workplace; their attitudes to maths would shift to a ‘can do’ mentality; and they would use appropriate maths skills and knowledge to complete vocationally related maths tasks, including problem solving. In the medium term, learners’ maths confidence and capability would increase relative to baseline. The overall intended impacts of the Embedded Maths intervention were that:

- Non-maths tutors would confidently and positively teach maths in priority, non-maths vocational H&SC courses contributing to improved functional numeracy

skills across the population; and

- Learners' improved maths confidence and competence would contribute to a more skilled workforce in H&SC and improved labour market outcomes such as career progression and increased earning potential.

Table 1: Logic model for the Embedded Maths intervention

Situation	Maths anxiety, often stemming from negative prior experiences with maths, can contribute to low levels of participation in adult numeracy learning.	**Aims**	By embedding Functional Skills Level 1 content and vocationally relevant maths into H&SC Level 2 courses, the intervention aims to enhance learners' maths skills in relevant work-related contexts by supporting tutors to develop new teaching practices and tutors and learners to build positive mindsets to maths.

Inputs and activities	Outputs	Change mechanisms	Outcomes	Impacts

Inputs
• Financial resource
 	
Activities
• Tutor recruitment
• Initial tutor training, led by expert practitioners or training leads, and ongoing support
	• No. tutors recruited
	
	• No. training sessions completed
	
	• 12 H&SC lessons implementing embedded maths teaching approaches
		• By exposing the maths as integral to H&SC work and courses, tutors and learners:
		  • understand its relevance and importance to daily life and
		  • overcome negative attitudes and anxieties about learning maths
		
		• Improved tutor self-belief and confidence in maths lead to effective teaching and improvements in learners' maths
			Tutors: Short term
			• Improved maths knowledge
			• Adopt a maths lens, exposing learners to varied maths approaches
			• Promote a positive mindset
			Tutors: Medium term
			• Increased confidence in own ability
			Learners: Short term
			• Able to identify the maths in H&SC curriculum and workplace.
			• Improved mindset and attitudes to maths
			• Appropriate maths skills and knowledge to complete vocationally related maths tasks, including problem solving.
			Learners: Medium term
			• Able to apply maths in a H&SC vocationally relevant test to Level 1 FSQ
			• Increased maths confidence
			• Feel more capable to apply maths in a H&SC work context.
				• Greater workforce capacity to teach functional numeracy skills in non-maths courses, in turn reaching a wider learner population
				
				• Improved labour market outcomes including career progression and earning prospects within H&SC
				
				• Better skilled H&SC workforce thanks to increased vocationally-relevant maths competence

Evidence assessment	The intervention was informed by evidence that learners often engage most successfully with scenarios that are real and relevant to daily life and that embedding learning into workplace activity or vocationally relevant learning helps maintain their motivation. Evidence is limited for the effect of this strategy in the H&SC sector despite it being a priority sector.

Assumptions	• Tutors can access and attend all or most training, requiring provider resourcing to be able to release staff for training • Tutors sign up willingly, are well-informed about the maths content in advance, and have line manager and senior manager support • Tutors adapt lessons to fit within normal lesson time and to the wide range of FE maths lesson formats, lengths and curriculum coverage. • Tutors receive enough time and support to change their practice through CPD, workshops, reflection and meetings with expert practitioners.	**Possible unintended consequences**	**Tutors/learners** could have their fear of maths reinforced If **tutors** are not adapting to the training as expected it could impact their teaching of the H&SC content

1.3 Intervention Description[6]

Name

Embedding Maths in Health and Social Care (H&SC) Level 2 courses.

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

Maths anxiety is prevalent among adults in England and may contribute to low levels of participation in numeracy courses. This intervention sought to boost participation and achievement in maths by embedding core components of the FSQ Level 1 curriculum into Level 2 H&SC courses and training H&SC tutors to communicate a positive attitude to maths. This approached aimed to help learners see the relevance of maths to their future career progression and grow in confidence and ability without the anxiety associated with standalone maths courses.

The intervention addressed the key numeracy demands of work in the H&SC sector, better preparing learners for the workplace. Specifically, the intervention aimed to equip learners to:

- understand the real-world relevance and application of mathematical concepts
- develop problem-solving skills and learn how to analyse situations, make informed decisions and solve problems that they may encounter in the workplace
- develop skills to help them communicate and document quantitative information
- maintain quality assurance and standards in vocational tasks

See background and rationale and the theory of change for more detail.

Who: Recipients of the intervention

The intervention targeted Level 2 H&SC learners who did not possess Level 2 maths qualifications and/or had low maths confidence. Eligibility criteria for this trial were based on learner eligibility for the Level 2 H&SC students, rather than their existing maths ability. As this intervention embedded maths into H&SC courses, it was mandatory for H&SC learners in the providers that took part. Entry requirements for these courses vary,

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

and providers typically engage learners to participate in initial assessments to ensure they can thrive in their courses.

In practice, some learners taking part were also registered for a functional skills qualification or GCSE maths, which diverged from the ToC. The providers recruited quite different profiles of learners, with one supporting a single gender cohort and the other's cohort predominantly covering learners seeking to gain UK qualifications to support careers in H&SC in the UK. Some in this latter group possessed higher education qualifications from home countries, including higher levels of maths competence than intended. This is explored in the section describing the learners' demographics and characteristics.

The participating tutors were existing H&SC tutors, trained in the Embedded Maths approach. In practice, 2 providers delivered the Embedded Maths with 3 tutors involved across these 2 providers.

What: Physical or informational materials used in the intervention

The maths content derived from the numeracy and problem-solving skills required for the H&SC course. It reflected workplace practices and skills that vocational tutors identified as particularly challenging for learners during consultation with the product developer. Examples of the embedded maths included in this approach were:

- **Statistics and Data** - teaching learners to collect, analyse and interpret healthcare data and explore statistical concepts like averages and percentages.
- **Dosage Calculations** – integrating practical examples of dosage calculations for medications and treatments, emphasising the importance of accuracy to prevent medical errors.
- **Budgeting and Resource Management** – using mathematical concepts to analyse budgets and allocate resources in health and care settings to make informed decisions.
- **Clinical Measurements** - exploring the importance of accurate measurements in healthcare settings, such as body mass index (BMI) and vital signs and teaching learners how to interpret and apply measurement data in H&SC contexts.

Further details are contained in Appendix 2.

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

The intervention re-worked the existing Level 2 H&SC curriculum to incorporate 18 guided learning hours (GLH) of maths content. This covered approximately 60% of the FSQ Level 1 maths curriculum. Although Level 2 H&SC courses are offered by several awarding organisations, the intervention was applicable to all of them. The intervention comprised content and materials on: interpreting data and averages; understanding units, precision and context; measuring; using scales; budgeting; cost and profit; understanding time; recording and presenting data; understanding temperature; and charts and graphs, as these relate to working in H&SC. For more detail on lessons and resources please see the intervention description in Appendix 2.

In addition to initial training, each tutor was invited to attend ongoing lesson study sessions throughout the duration of the intervention (around 2 hours per topic). The online lesson study sessions during the delivery timeframe involved small groups collaborating with an expert trainer to focus on how their teaching practices could better support learner understanding using an embedded maths approach.

Overall, the intervention consisted of 12 sessions lasting 1.5 hours each, which tutors delivered as part of the normal delivery of the H&SC course. The maths was integrated material rather than additional to normal delivery.

Who: Intervention providers/implementers

The Education and Training Foundation (ETF) developed the Embedded Maths intervention and provided tutor training.

The intervention was delivered by H&SC tutors, who received 10 hours of initial online training on how to deliver Embedded Maths classes prior to the start of the 2024-2025 academic year. ETF also provided ongoing support throughout delivery. The intervention aimed to provide tutors with the necessary materials, training and ongoing support from ETF to ensure standardised, quality delivery.

Etio served as the Managed Service Supplier (MSS), appointed to recruit and contract manage participating providers.

How: Mode of delivery

Delivery of Embedded Maths to learners was course-based and reflected usual teaching modes in the 2 providers that delivered the intervention.

Where: Location of the intervention

The intervention was designed for both face-to-face and online delivery to ensure learner inclusion and accessibility. Tutors delivered the intervention in both formats.

When and how much: duration and dosage of the intervention

ETF required to attend all pre-intervention training sessions (100%) and at least 80% of the weekly lesson study sessions to deliver the intervention as intended. To support this, ETF limited group sizes to 12 participants for online training and 20 for face-to-face sessions. were discrepancies between programme information from the MSS and the qualitative data from tutor interviews regarding the exact proportion of training and study sessions attended, although both data sources indicated compliance or near compliance.

The intervention required learners to engage weekly (typically) and for a dose of 1.5 hours across 12 weeks (or 12 sessions). ETF expected that attendance at 80% of sessions would be sufficient for learner outcomes to emerge. The frequency of classes and intensity of delivery depended on providers' class schedules. Although ETF expected some learners would receive lower weekly doses over 24 weeks, although this did not transpire.

Tutor training commenced in summer 2024. Learners began their courses from September 2024. The end point depended on the duration of the H&SC course combined with the FSQ course. The total number of hours delivered in class should be 18 irrespective of the calendar time taken to deliver it. While management information indicated that 1 provider did not deliver the last 3 sessions, the tutor was clear at interview that all sessions and course content had been delivered.

Tailoring: Adaption of the intervention

The intervention was designed to be flexible to different settings without altering or diluting the intent. For instance, a provider could follow the 12-week 1.5 hour/week schedule or spread this across 24 weeks.

The delivery plan did not permit customisation of the delivery. Tutors were required to adhere to the content prescribed by the product developer and not deviate from this. ETF intended for the entire content to be delivered without exception or alteration, with minimal adjustments. Tutors were required to document any adjustments and share them with ETF and evaluators. Tutor interviews explored any adaptations made to content and course duration and the reasons for these changes, and these are discussed in the section on fidelity.

Modifications: Changes to the planned intervention

There were no modifications to the planned intervention.

Strategies to maximise effective implementation (planned)

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

Evidence of implementation variability

Tutors made minor adjustments to the timing and order of the content to meet learner needs. For example, they changed the order of units to better fit the existing curriculum and adjusted the language to support learners with ESOL or SEND needs.

1.4 Evaluation overview

This intervention was originally developed for evaluation through a larger scale efficacy trial. However, due to challenges in recruitment and retention of adult education providers, the evaluation proceeded as a small-scale, non-randomised descriptive, implementation and process study.

The challenges encountered by adult education providers included lack of staff willingness or confidence to engage with and teach the Embedded Maths content, organisational confusion around the demands of taking part in trials, as well as low demand for the relevant courses by adult learners in autumn 2024[7]. To provide lessons for future roll-out related to these challenges, the research questions for this evaluation were adapted to explore these issues.

Additionally, the design did not anticipate an overlap of learners between the Embedded Maths intervention and the other Adult Numeracy Trials delivered by DfE, but this occurred in practice. The overlap involved the Adapted Mastery Approach, which formed one intervention arm of the Functional Skills Qualification (FSQ) trial, and Preparation for Maths GCSE. Providers decided to deliver these interventions to the same learners, which only became apparent once delivery had started. This meant that learners could be exposed to both trials (many but not all were, since some chose not to take up both courses). This overlap led to changes to the research questions to explore the interrelationship between the 2 interventions for tutors and learners. Further information on the Adapted Mastery Approach and Preparation for Maths GCSE can be found in the respective evaluation reports. These changes to the intended research resulted in the

[7] Based on information captured by the MSS during recruitment

protocol for Embedded Maths being republished in July 2024 to include the revised research questions.[8]

The evaluation was therefore designed to maximise key points of learning from the 2 providers taking part and involved predominantly qualitative research with learners, tutors, college stakeholders and the MSS, Etio. Management information regarding tutor-training and learner attendance was analysed. Where possible, the research included data from withdrawn providers to understand the barriers and challenges leading to the limited intervention roll-out.

The IPE examined the quality, relevance and suitability of the Embedded Maths intervention and the processes involved in implementing it, as well as any adaptations that might be required to support future delivery or wider roll out.

DfE commissioned the Institute for Employment Studies (IES) to deliver this evaluation.

1.5 Research questions

The main research questions explored by the IPE are listed here. An asterisk denotes where a research question has been added or adapted between the 2 versions of the published protocol. Some of the IPE research questions included sub-questions. For clarity, we have only included headline questions here. The full list of IPE research questions including sub-questions can be found in Appendix 4.

1. What underpinned provider decisions regarding the undertaking and set up of the trial? *
2. What are tutors' experiences of the training and support provided to deliver the intervention?
3. What was the impact of non-attendance at training sessions? *
4. What was the experience of delivering the intervention for tutors who had not attended all the training?
5. How did tutors experience delivering the intervention?
6. How did taking part in 2 trials/interventions impact on teaching and learning? *
7. What are the barriers and challenges to delivering the intervention as intended? *
8. To what extent was the intervention delivered as intended? *
9. What are learners' experiences of the intervention?
10. What are the outcomes of maths interventions on H&SC courses for tutors and learners? *
11. What enablers and barriers are there to learner engagement and participation in the intervention?

[8] The final protocol is published here: Multiply Education Trial: Embedded Maths | Institute for Employment Studies (IES)

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

1.6 Reading the report

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

Further details about the costings and data collection tools used can be found in the appendices (Appendices 2– 10).

2. Methods

This section describes the methods used to evaluate the Embedded Maths intervention and the approach taken to the analysis.

2.1 Data collection

Desk research

Desk research explored Level 2 H&SC curricula to understand the role of maths within the topics covered and to understand 'business as usual' teaching practices. This helped establish whether the intervention changed existing approaches. This research informed the development of the tutor interview discussion guides, which explored how tutors interpreted the specification, links to maths in their practice and whether this changed after the training.

Baseline survey and ILR data[9]

A baseline survey with learners aimed to establish employment status and confidence levels with maths at the start of the intervention. However, survey data was only available from learners from 1 provider due to the overlap with other Adult Numeracy Trials whose survey responses were prioritised. Where the survey was conducted, 31 learners from this setting responded to all or part of the survey, giving a response rate of 56%. The imbalance in response means the survey findings have significant limitations for interpretation, particularly given differences in providers' learner populations.

Overall, 68 learners participated in the H&SC courses involved in the research. The ILR data included details on gender and age of participants from both providers, and details on learning difficulties/health conditions and employment status from 1 provider.[10] For the other provider, baseline survey data provided details on current employment status, care responsibilities, ethnicity and whether English was a first language.

Maths competency testing

Where tutors agreed and learners consented, the aim was to conduct baseline and endline testing of maths competence using a tool developed by the DfE for the Adult Numeracy Trials. A total of 23 baseline tests were conducted; however, the endpoint assessment was not conducted as this was prioritised for the parallel trials most learners

[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.
[10] It was not clear to evaluators why the ILR contained different information for the two providers. The evaluation uses survey data to supplement ILR data on demographics where available (see Appendix 5 for details).

took part in. This impacted on the ability for this evaluation to examine the research questions linked to the pre and post testing.

Qualitative interviews

Qualitative interviews were conducted with 14 learners and covered motivations to take part, experiences and outcomes including experiences of baseline testing where appropriate. Due to the small number of providers, all 68 learners who did not opt out or withdraw were invited to take part in an interview. The number achieved represented all those who volunteered. Participating learners received a shopping voucher worth £30 as a thank you, in line with Social Research Association guidance.

Of the 68 learners taking the Embedded Maths intervention, a baseline survey was available for one of the settings, with 56% learners (31 learners) at this setting responding to all or part of the questions, and 9 also participated in qualitative interviews. This may suggest a more engaged section of the cohort contributed to the research. The interviews explored the additive effect of the 2 approaches to maths (Embedded Maths and Adapted Mastery Approach) and probed levels of satisfaction with the amount of maths content experienced in the courses. Interviews also explored how learners experienced the 2 maths interventions including the coherence of the approaches.

Qualitative interviews were conducted with 2 of the 3 tutors who took part in the intervention; all 3 tutors had been contacted and invited to interview. Interviews covered wide-ranging topics including prior experience of teaching maths, views of the training and support sessions, experience of delivery, and the effect of embedding maths in H&SC courses. They also probed the extent to which the intervention affected tutors' own maths confidence, and confidence and competence to embed maths in the curriculum, as well as any signs of sustained changes to teaching practice resulting from taking part. These interviews explored aspects of fidelity as well as how the intervention differed from usual practice. Tutor interviews also covered the effects of delivering Embedded Maths alongside the other Multiply interventions.

Interviews were conducted with decision-makers at the 2 providers that completed the intervention as well as with representative of the managed service supplier. These aimed to understand provider motivations for taking part in the Adult Numeracy Trials, experiences of working with the managed service supplier, as well as understanding organisational challenges, barriers and benefits.

Additionally, interview data from decision-makers at 2 providers that had dropped out were analysed to understand the reasons for institutions withdrawing from Embedded Maths and to explore the barriers to engaging with the intervention.

Management information

Management information was also analysed. This related to tutor attendance at training sessions and ongoing support. The data was inconsistent between submissions with duplicate or conflicting entries. Data was more complete in the first submission for 1 provider and in the second submission for the other. Due to this, the evaluation used the most complete set for each provider in the analysis. However, this inconsistency, alongside discrepancies between the management data and insights from the interviews, plus the small scale of the intervention roll-out, meant that conclusions from the management information require cautious interpretation.

Management information regarding learners' attendance at their H&SC course sessions was also assessed alongside management information from the MSS regarding overall withdrawal rates and reasons for withdrawal.

Research tools and data collection

Research tools and data collection instruments including surveys and discussion guides were developed by IES and Ipsos and signed off by DfE. Additional materials included data privacy documentation and information sheets for interviewees. Ipsos administered the survey with learners, conducted the maths assessments and led all interviews with providers that withdrew. IES conducted all other qualitative interviews and led all analysis. The Multiply Trials Ethics Panel and the Multiply Technical Steering Group granted ethical approval.

Participating providers received trial readiness packs containing all necessary information for participation and links to further resources. Participants received detailed information to enable them to make fully informed decisions about taking part. The information covered the learner survey and qualitative research as well as information about the intervention and its purpose. Where learners did not wish to take part, they could opt out and continue on the course. Participating learners could also opt out of any element of primary data collection. A copy of the privacy notice is included in the appendices. For more detail on ethics please refer to the published protocol.[11]

2.2 Data analysis

Interviews were analysed using a framework approach.[12] The analysis then incorporated additional management information and survey data. The overall approach to synthesising the findings drew on the theory of change and the revised research

[11] Multiply Education Trial: Embedded Maths | Institute for Employment Studies (IES)
[12] A systematic method for qualitative data analysis that involves developing a thematic framework to classify and organise data according to key themes, concepts and emergent categories.

questions. The analysis examined the assumptions, enablers and barriers relating to the links between each step and considered the evidence for each element having been realised in practice. Qualitative and quantitative evidence from the evaluation informed an assessment of the feasibility of implementing the intervention. Qualitative evidence from tutors and learners provided insights into the mechanisms set out in the theory of change as well as enablers, barriers and assumptions. Qualitative evidence from key stakeholders revealed the barriers and challenges to engaging with this intervention.

About the learners taking part

As the intervention embedded maths into existing H&SC courses, participation was mandatory for learners on these courses in participating providers. Learners eligible for Embedded Maths had to meet the requirements of the H&SC course they were enrolling on. Entry requirements for H&SC courses vary, so the evaluation did not set additional eligibility criteria relating to existing maths qualifications. This could mean that Embedded Maths was delivered to learners who did not need to improve their numeracy skills. However, as it met learning objectives of the H&SC courses and FSQ Level 1 qualifications, participating would not have a detrimental effect on them. Nonetheless, this suggests some inefficient use of funding due to lack of close targeting.

The learner profile and starting points varied across the 2 providers; 1 provider's cohort was single gender, and the other provider's cohort was largely comprised of learners seeking to gain UK qualifications to support a career in H&SC, according to interview data. In the single-gender setting, ILR data showed that the majority of learners were not in work and more learners reported learning difficulties or prior health conditions than did not. This group did not complete the survey. In the second setting, the survey showed that many learners were motivated by seeking UK-recognised qualifications and already held higher-level qualifications from their home countries. Of those who completed the survey, a majority in this provider reported holding degree-level qualifications, with many describing themselves as confident or very confident in using maths in everyday life at baseline, which was not anticipated in the intervention design. ILR data on prior qualifications was not available for this group.

The composition of the second cohort contrasts with an assumption underpinning the theory of change, which anticipated that many learners would be operating at a relatively low level of maths. In practice, the learners in the second provider had higher prior qualifications and higher baseline confidence, meaning overall the cohort did not fully align with the intervention's assumed target group. Of these learners, who were completing the intervention online, around three quarters were employees in full time work of more than 30 hours per week (24 out of 31). The remainder worked part-time as employees for less than 30 hours a week, showing that many learners had to balance the course alongside work responsibilities. Similarly, only 8 out of 28 learners completing the

course online who responded to the survey reported having no caring responsibilities. Of the learners who completed the course in person, most were not in work, with 7 (out of 13) reporting that they were not in paid employment or looking for work.

The tables of learner demographics are contained in Appendix 9 .

2.3 Variation from protocol

The research design was scaled back to reflect the scale of delivery. This meant that the endline survey of learners was not conducted and nor where tests of maths attainment. The number of qualitative interviews was aligned to the scale of delivery. Interviews with withdrawing providers were included in the analysis.

2.4 Limitations

The key limitation of this study was its scale. The evaluation involved only 2 providers that each supported specialised and different learner cohorts. One provider had a high intake of learners with English as an additional language, while the other had a high number of economically active learners, some with SEND needs. The small scale and these specialisms limit the degree to which findings can be considered generalisable. Additionally, the evaluation relied predominantly on qualitative research which meant it captured rich insights into experiences and perceived outcomes but could not establish reliable trends. Finally, many learners in both providers also took part in other Adult Numeracy Trials, meaning that even where they perceived outcomes from Embedded Maths, the evaluation could not determine the extent to which these perceived outcomes were influenced by the other maths interventions.

3. Implementation and process evaluation results

3.1 Summary

This chapter draws on qualitative and quantitative data from interviews, surveys, and attendance records to examine how Embedded Maths was delivered by providers and tutors and experienced by learners. The evaluation considers provider, tutor and learner engagement and delivery practices. It also considers contextual factors influencing delivery and participation. It provides an account of issues encountered and offers practical considerations for future implementation. Key IPE findings are provided below, with more detail provided throughout this chapter.

Compliance: Tutors were expected to attend 100% of pre-intervention training and 80% of follow-up CPD sessions. Training attendance records indicated that 1 tutor attended 75% of the pre-training while the other attended 100% of it. In 1 provider the learners had an average attendance rate of 92% and in the other the average learner attendance rate was 80%.

Attrition: This intervention was originally developed to be evaluated through a larger scale randomised controlled trial. However, due to the challenges in recruiting sufficient adult education providers, the evaluation proceeded as a small-scale, non-randomised descriptive, IPE involving the 2 providers that delivered the intervention along with interviews with 2 providers that withdrew.

Fidelity: The training was critical to enabling the 2 participating tutors to deliver as intended. The resources and course materials further supported tutors to deliver Embedded Maths in line with guidance. Tutors made minor adjustments to the timing, ordering and language of the content, informed by the needs of their learners.

Feasibility: Alongside the recruitment challenges, the evaluation identified barriers and potential improvements. Further testing of the intervention would benefit from a clearer understanding of differing levels maths capability and confidence among H&SC tutors.

Readiness for trial: The evaluation found that the intervention has a reasonable level of readiness and would be suitable for further testing with some minor adjustments.

Perceived outcomes: Despite the small scale of this evaluation, the evidence indicated that Embedded Maths was leading to changes in tutor practices and more positive attitudes and confidence in numbers among learners. Learners also reported increased confidence in the practical application of maths in the workplace with the intervention leading to realisations that maths was relevant for their jobs in H&SC. Confidence gained through the course encouraged some participants to consider additional maths qualifications and other further learning.

3.2 Findings

Tutor experience and outcomes

This section explores the experiences of the 2 tutors who participated in the evaluation and delivered the intervention.

A change to usual delivery practice

While maths and numeracy were previously present in the H&SC curriculum, the Embedded Maths intervention represented a significant change to usual practice. Desk research conducted prior to qualitative data collection examined the curricula of 23 eligible courses, to ascertain the extent to which maths was a usual feature within H&SC courses at Level 2. This revealed minimal emphasis on maths or numeracy as a theme. Of the 23 courses reviewed, 2 had a specific maths/numeracy unit and 1 of these applied maths specifically to the context of H&SC. In the other courses, maths and numeracy skills were implicit in some units and topics. However, the degree to which tutors were likely to focus on maths skills, in a way similar to the intervention, is likely to depend on individual interpretation. Both participating tutors recognised that some of the tasks within the H&SC curriculum required some maths skills. However, neither had previously developed the maths element of the curriculum.

The 2 tutors involved in delivery said that the intervention changed their own practice. Both tutors made ongoing changes to their teaching approach as a result of their participation. Both continued to use Embedded Maths in their courses, and 1 adapted the resources for use in higher level H&SC courses. The Embedded Maths approach may have further applicability across other levels of H&SC course provision. Given these tutors had very different levels of maths confidence and prior experience of teaching maths, these findings suggest the intervention has potential to deliver positive outcomes that align with assumptions in the theory of change.

Positive gains from being involved in delivering Embedded Maths

The 2 participating tutors reported that as a result of the intervention they had adopted new approaches to teaching and gained new knowledge. For 1 of the tutors, it enabled a focus on the context in which maths is used within H&SC roles rather than delivering maths as an abstract concept, which they described as “all of these formulas”.

For the other tutor, the training and intervention improved their maths confidence:

> It's completely changed it now. I don't run away from it…it was nice to be able to feel confident in my own ability then and confident in myself. – *Tutor interview, participating college*

Tutor views on the intervention

The 2 tutors who delivered Embedded Maths reported that learners engaged positively in the sessions, they enjoyed the Embedded Maths and had fun with the content. The group interactive learning approach, which was integral to delivery, worked particularly well. Tutors said the intervention format encouraged learners to ask questions and come forward when struggling. Furthermore, tutors reported that learners could refer back to previous content.

Both tutors believed that embedding maths would have value for other vocational topics as it would provide an applied focus to help learners overcome fears of maths theory:

> English and maths embedded in any subject would be incredible because, as I say, we have a lot of SEND, we have a lot of ESOL. If that undercurrent and embedded in what they're doing on a daily basis, it becomes a way of life, doesn't it? It becomes a way of studying. It's not, like, a separate entity … It's mushed together in stuff that they're enjoying. – *Tutor interview, participating college*

Factors affecting delivery

There were a number of factors that effected delivery of Embedded Maths.

Issues communicating Embedded Maths effectively

Recruitment started prior to the completion of the training and curriculum design, meaning the MSS could not answer provider questions about resources and what training would entail. Potential providers were unable to see the details of the intervention they were being asked to sign up to. This meant that they felt ill-equipped to provide the support their H&SC tutors needed.

Additionally, there was limited evidence that H&SC tutors understood the intervention delivered both H&SC and FSQ maths learning outcomes. While Embedded Maths ‘mathematicised’ H&SC curricula content, this content already existed in the H&SC curricula. A college stakeholder from a provider that withdrew reported that tutors felt unable to deliver the intervention as non-maths specialists.

> They just couldn't get their head around how they could deliver this type of content as non-maths teachers. That's why we ended up withdrawing from the health and social care project. – *College stakeholder, withdrawn college*

The H&SC subject teams may have been less aware of the intentions of the Multiply adult maths policy to simplify maths, than teams teaching FSQ and GCSE maths and did not expect maths to be part of their curricula. This could have led to early anxiety when

they read about the intervention in the trial pack. The MSS suggested that in future earlier and direct conversations with tutors might convert them to being enthusiastic about the intervention.

> It needs complete understanding across the board otherwise people just read it, didn't understand it and weren't interested. But having that one-on-one time where we could explain it, then people would get really excited about the prospect. – *Programme Stakeholder*

A stronger marketing message emphasising that maths is already a component of H&SC courses could reassure H&SC tutors that they already covering the key content.

Tutor anxiety

Maths anxiety among tutors proved a more significant barrier than anticipated which contributed to recruitment and retention issues. The 2 participating tutors had differing responses to the intervention as 1 had prior maths experience teaching and was confident to deliver the intervention from the outset. The other expressed considerable anxiety about maths. Although the training was effective in developing their maths confidence, this was not the case across the board, as evidenced by the number of tutors and providers withdrawing from offering the intervention.

Withdrawal data, including from tutors who completed most of the training, suggested that maths anxiety was a key factor (among other barriers) for those who ultimately did not deliver Embedded Maths. Adopting a ‘tutor first’ approach with earlier engagement, tailored communications and/or additional activities to alleviate anxieties, could address maths anxiety barriers among H&SC teaching staff. However, despite additional support being implemented by some providers, some tutors still withdrew from training because the maths was too challenging.

> They kept coming out of the training sessions completely bewildered, like, I just don't feel comfortable with the content that's happening here. – *College stakeholder, withdrawn college*

Mixed perceptions and experiences of training and ongoing support

The 2 participating tutors did not find training overly burdensome.[13] Both were positive about the volume of content and found training flexible, even though for 1 it impinged upon one-to-one time with learners. The tutors found that training effectively highlighted the benefits of the intervention and prepared them for delivery. This was despite in 1 case initially viewing the intervention as “extra hassle” that disrupted an already

[13] It should be noted that the burden on providers of the training was a concern for other providers that withdrew from the intervention. This is discussed in greater detail in the provider engagement and withdrawal section.

acceptable scheme of work. However, the intervention trainer was able to “put it in a different spin” on this which ultimately changed the tutor’s perspective.

The evaluation observed some of the pre-intervention training in mid-September 2024 and found that tutors were familiar with key concepts and could provide model answers to questions posed by the trainer, appeared keen and interested in the intervention. A participating tutor reported that trainers supported them to develop their teaching and provided them with alternative approaches to teaching maths.

Ongoing support sessions were key to developing practice, as anticipated in the theory of change, and to developing tutors’ teaching practices, however the 2 tutors varied substantially in the amount of CPD they engaged in:

> We would see the trainer, and she would go through that week's Padlet,[14] 'This is what you do. Have a look here. See if you can find some or give us some tasks.' Then the next day we would deliver it with the students and then the next week when we came back and we'd feedback on how it went, anything we could have changed, what have we got from that, where did it lead to, you know, did we try anything else. – *Tutor, participating college*

Evidence is also mixed on whether the training and course materials can reduce maths anxiety. The theory of change anticipated that tutors’ engagement in the training would increase knowledge and confidence. For 1 tutor, although they were initially resistant and anxious, the trainer, training environment and materials gave them the confidence to proceed with delivery.

> She just, sort of, calmed any fears, showed me how to do it… it was really good because I had the backup of the Padlet, I had the backup of the trainer, and I had the backup of having a go first and trying. – *Tutor interview, participating college*

However, some H&SC tutors continued to feel they lacked the appropriate knowledge and confidence even after the training**.** Tutors from 1 of the withdrawing colleges still felt they did not have the right expertise or confidence to deliver even after attending 80% of the initial training, ultimately contributing to the provider’s withdrawal.

> They kept coming out of the training sessions completely bewildered, like…they just couldn't get their head around how they could deliver this type of content as non-maths tutors. – *College stakeholder, withdrawn college*

[14] A Padlet is the technical device used by the trainer to deliver resources to tutors

Flexibility in delivery

The Embedded Maths intervention was delivered successfully by both tutors, 1 using online and the other in person. Both formats offered distinct advantages for engaging learners with different accessibility needs; online delivery suited those with work or caring responsibilities, while in person sessions provided more immediate interaction and support. Evidence suggested that clearer about how the intervention can be adapted to both formats may increase confidence and reduce barriers among tutors, and improve feasibility for broader application.

The intervention also requires additional flexibility to enable tutors to fully support learners less familiar and less confident with maths content. The participating tutors both adapted delivery to allow more time for learners with lower levels of maths knowledge and capability to achieve full understanding. These additional time requirements could have cost implications for providers and may reduce feasibility of engagement.

Perceptions of quality of tutoring

Learners consistently expressed satisfaction with the quality of teaching they experienced. They described as professional, patient and supportive. Tutors' adaptability and clear communication sustained learner engagement and built their confidence. This aligns with assumptions in the theory of change that positive relationships between tutor and learners facilitate greater learner engagement.

Provider engagement

This section presents the findings from interviews with provider stakeholders and management information on provider engagement. It covers motivations for participating from the 2 providers that delivered the intervention, providers' experiences of setting up Embedded Maths and reasons why some providers withdrew. Interviews with providers that completed the intervention included questions after research had started, in response to early findings about provider engagement and withdrawal.

Motivations underpinning engagement

Provider stakeholders were motivated to test the intervention because they recognised its potential value for tutors and learners. They viewed it as a good opportunity to access CPD for tutors that would benefit learners struggling with maths in the H&SC curriculum.

> It's really great CPD for our tutors … I even had our quality team on standby to take learnings from a tutor that had been taught it, to make sure that whatever we learned from it, we were rolling out. – *College stakeholder, withdrawn college*

> When we saw that there was an opportunity for health and social care, definitely we just piqued interest without even giving it a second thought because we wanted our learners to benefit. – *College stakeholder, participating college*

Positive experiences with wider Multiply programme were important in encouraging participation in the Adult Numeracy Trials. A provider reported that their experience with the Multiply programme had given them a sense of what might be achieved through these new approaches and supported their decision to deliver Embedded Maths.

> Multiply is probably one of my favourite contracts. I really, really enjoy Multiply. I think it's an amazing contract…Multiply allowed us to have more free rein and make it really tailored. So, it's been a real nice experience delivering something that can really impact the hardest to help learners that need it. So, when the trials came up, I was quite excited because it, kind of, felt like we're looking to grow it, change it, evolve it and I wanted to be part of that. – *College stakeholder, withdrawn college*

Setting up the intervention

The 2 providers that delivered the intervention did not report any challenges setting it up. Stakeholders in these providers said they received comprehensive information about the intervention and felt well supported with contracting proceeding smoothly. Tutors had limited involvement in set-up beyond training but were positive about communications.

In contrast, providers that withdrew reported significant challenges in managing the volume of information provided during set-up. Interview data from withdrawn providers revealed there were far more emails and information than they expected, some of which was confusing, incomplete and/or inaccurate. Providers reported receiving contacts from multiple, different people, links to resources that did not work and having their responses go unacknowledged. For some providers, limited staff resources and newly hired staff exacerbated the challenges.

Provider engagement and withdrawal

Management information on withdrawn providers shows of more than 50 providers that initially showed interest, 42 withdrew before signing the contracts, 12 registered for training, 6 received partial or full training and 2 delivered the intervention. Providers that withdrew cited various reasons including tutor workload creating insufficient resource, challenges recruiting tutors, and/or challenges to recruiting learners. Some providers withdrew without offering detailed reasons.

The intervention's high upfront training requirements and ongoing support commitments may have created a financial constraint limiting provider engagement. A withdrawing provider interviewed for the qualitative research stated that training was burdensome due to the short timeframe to negotiate participation with tutors, as well as inflexible timings (particularly for the ongoing training) which made it harder to engage part-time tutors. This was exacerbated when providers had just 1 part-time, H&SC tutor. In contrast, a participating provider acknowledged that although training created time burdens, they could support the tutor to attend as they had the resource to arrange cover and reduce the tutor's marking load.

The MSS indicated that training burden was a concern for multiple providers and suggested that adjustments to training intensity would improve accessibility. However, while the product developers acknowledged the training burden they maintained this was the level of support was appropriate and necessary for the integrity of delivery.

Given that the management information showed many more providers initially expressed interest than delivered the intervention, the intervention aims clearly resonated with provider institutions. Exploring ways to minimise, streamline or condense elements of the intervention could reduce barriers to participation.

3.3 Compliance

Analysis of compliance considers the extent to which H&SC tutors met the thresholds for participation in the training and CPD sessions.

Tutors were required to attend 100% of pre-intervention training as well as 80% of the ongoing, CPD expert support. However, conflicting information between tutor interviews and management data on training attendance prevented the evaluation from confirming the exact degree of participation. While in interviews the 2 tutors who delivered the intervention said they attended all initial tutor training, the management information did not record this. Training attendance records showed 1 tutor had 75% attendance compared to the other who had 100% attendance. Future trials would benefit from communications that ensure provider adherence to intervention conditions from an early stage.

As noted in the section on factors affecting delivery, one tutor had previously taught maths and expressed confidence in their maths teaching ability prior to training. This tutor had a lower rate of recorded training attendance and ongoing support attendance. Since the theory of change did not anticipate that H&SC tutors would have high degrees of maths confidence, measures of compliance for tutor training could be adapted to account for variance in prior maths teaching experience and confidence.

3.4 Fidelity

Analysis of fidelity explores the extent to which tutors delivered the intervention as intended and whether this delivery was sufficient to establish that it caused observed outcomes for learners.

The training proved critical in enabling the 2 participating tutors to deliver as intended. For example, 1 tutor reported it was comprehensive and provided sufficient knowledge and resources to deliver the intervention as intended and without it they would have continued to teach as they usually did. The other participating tutor was keen and confident from the outset. Nonetheless, they said training was essential for understanding the intervention's underpinning rationale, delivery methods, and the core maths required within H&SC.

> If not for the training, the output would be different…it kind of narrowed it down to what was needed, not the generic need of mathematics. – *Tutor interview, participating college*

The resources and course materials supported tutors to deliver Embedded Maths as intended. Trainers provided tutors with weekly Padlets and PowerPoint slide decks that set out content and detailed instructions on progressing through lessons. Tutors used these as teaching aids as they provided a clear instructions for intervention delivery.

> Once you know the materials, you know what is expected from the delivery, from the content provided. It, kind of, helps to know. It's more like being taught what you need to teach. So, yes, the teacher's being spoon fed to deliver, so it makes it a lot easier to deliver. – *Tutor interview, participating college*

As noted in the section discussing flexibility in delivery, tutors made minor adjustments to the timing and ordering of content, with decisions were informed by learner needs. For example, where learners were struggling with elements of the maths content, tutors dedicated more time to the topic to ensure that learners built a solid foundation before progressing. However, the additional time required led to changes to lesson plans and reduced time for teaching the H&SC curriculum. This led to the tutor offering catch up sessions through half-terms and providing additional sessions at the end of the course to finish the content.

Other examples included a tutor swapping the order of the units to better fit into the existing curriculum. Trainers were informed of these changes, as per the requirements of the intervention protocol, and there was no evidence of delivery being negatively

impacted. These minor adaptations were recorded data supplied by providers[15] and the product developers were satisfied they did not affect the integrity of the intervention.

Tutors also made minor adaptions to the intervention's content, which could inform future iterations of the intervention. For instance, tutors adjusted the language used in the Embedded Maths content to support the needs of learners with ESOL and SEND.

> Some of the language and some of the specialist language and the technical stuff, it was quite difficult for them to grasp at first and then people were getting a bit frustrated with it but, you know, we persevered, and we had extra help and support from student liaison that was able to come in and sit in on lessons to help… I only had to change some of the language a little bit. I tried to keep the content as close to what it says on the Padlet…Just used the words that were given, like subtract and addition and all the things like that. And then, while I was talking about them using language that they would understand, you know, 'take them away', that type of thing. – *Tutor interview, participating college*

Tutors shared these changes with trainers either at the weekly CPD sessions or through feedback calls. The product develops could use these adaptations to refine the intervention, with options built into the intervention training and resources.

3.5 Feasibility

This section explores evidence on the practicality and feasibility of the intervention. Specifically, it considers enablers and barriers to delivery based on tutor feedback and experience.

A programme stakeholder believed that offering upfront and direct reassurance to H&SC tutors about the intervention approach and content might allay their fears and ultimately reduce attrition.

> I think some more personal touches directly with the tutors, just to reassure them of their own maths ability. I think straight away launching into teaching them how to teach other people can be incredibly daunting. So, I think if there is going to be more work done into health and social care sector for maths, there needs to be more support for the tutors first off. – *Programme Stakeholder*

[15] The Ipsos Data Portal refers to system used to collect learner data from providers participating in the Adult Numeracy Trials. Details of the learner data fields used for Embedded Maths can be found in Appendix 10.

Further testing of this intervention may therefore benefit from a clearer understanding of differing levels of tutor maths capability and potentially a differentiated approach to establishing engagement and confidence in tutors, particularly those with maths anxiety. Programme and provider stakeholder interviewees suggested that feelings of anxiety were widespread among tutors and tutor resistance to delivery ultimately contributed to 1 provider's decision to withdraw.

The theory of change included an assumption that tutors would sign up willingly. However, many were not willing and interview data suggested that senior management made decisions to sign up without prior consultation with delivery staff. This became contributory factor for some providers withdrawing from the intervention (of the 27 providers that submitted details for involvement, only 2 completed the intervention), due to reluctance among staff to deliver a maths intervention. It suggests that this theory of change assumption was not sufficiently explored during recruitment. Therefore, while there is evidence showing the training has the potential to help tutors to overcome that initial reluctance (see section on 'mixed perceptions and experiences of the training and ongoing support'), these findings also suggest that tutor confidence presents a bigger barrier than anticipated and will require more focus in future delivery.

Dosage

Evidence is mixed on whether the full dosage of the intervention was delivered, but the 2 tutors stated delivered it in full. However, management information was missing for the final 3 sessions at 1 provider despite repeated attempts to secure it via the data uploading process meaning full dosage cannot be confirmed.

Contamination of delivery

Many of the learners were enrolled on a maths qualification alongside their H&SC course. These co-occurrences were with other Adult Numeracy Trials (the Adapted Mastery Approach or the Preparation for Maths GCSE interventions), rather than business-as-usual maths provision**.** Learner data showed that 52 learners at 1 provider were enrolled on Adapted Mastery Approach, while the other provider had learners on both this and Preparation for Maths GCSE (there being 68 learners in total).

The qualitative research established that providers wanted to take part in multiple trials to maximise CPD opportunities for tutors and benefits for learners but had not anticipated the administrative challenges. The MSS reported that numerous contacts at 1 provider led to confusion about the parameters and expectations for taking part in the trials. As different tutors delivered the maths and H&SC interventions, the crossover in delivery was not immediately apparent. The situation was clarified when learner data uploaded to Ipsos Data Portal was analysed by the evaluation team. There was evidence from one

provider that dual registration was intentional. They believed this would result in greater gains for learners maths confidence and competence.

The overall consequence is that any reported improvements in maths confidence or competence cannot be attributed solely to Embedded Maths. While there were no imposed barriers to multiple trial participation at provider level, the concurrent delivery of different maths interventions to the same learner cohort means that their individual effects cannot be separated. To understand the relative merit of Embedded Maths as an intervention, future trials would need to test it in isolation from other maths programmes.

Impact of dual enrolment on other maths programmes

While ILR data shows that many learners at the providers that completed the intervention were enrolled on additional maths programmes, many learners interviewed appeared unaware of which additional programmes they were taking. Several could not distinguish between other courses and Embedded Maths.

> Maths is maths, so I don't think it's different. – *Learner interview*

Despite this, both learners and staff perceived the courses as complementary rather than confusing.

> It was very interesting first of all because learners were taking a lot from each of the sides [the different courses where learners were receiving maths tuition] …they piqued interest in both actually and they were getting on well with both. – *College stakeholder, participating college*

Multiple learners noted that concepts covered in 1 course often appeared in another, reinforcing learning through repetition. This overlap may have enhanced learner engagement and confidence, even if it obscured the individual contribution of each intervention to learner outcomes.

3.6 Readiness for trial

The evaluation findings suggest that the intervention has a reasonable level of readiness and would be suitable for further testing with some adjustments. The 2 participating tutors were broadly positive about the content, training and experience but indicated that minor adjustments to the intervention's length and content, and adjustments for online learners would improve Embedded Maths for future delivery. This could include extending the intervention to cover the full H&SC course, ensuring it can be delivered in the planned number of sessions (it could overspill) and developing more interactive and virtual content to leverage the benefits of online technology. Given 1 provider withdrew because they offered a condensed delivery mode, the intervention could be redesigned to be

delivered with this type of intensity. However, any value of increasing the length of the intervention would depend on the mode of delivery; enhancing flexibility to accommodate different delivery modes may be more important. The intervention protocol did not specify the provision of catch-up opportunities for learners who missed sessions, but data suggests these should be added to support learners unable to attend all course sessions. This implies that adjustments should be made ahead of further rollout.

However, an important area of focus needs to be reaching, engaging and communicating directly with H&SC tutors directly, to build their confidence in delivering vocationally relevant maths prior to training, and to ensure their support of senior management decisions to deliver the intervention. Additionally, minimising training burden and streamline communications will be important. These measures are likely to increase participation from a wider range of providers.

3.7 Learner motivations and perceived outcomes

This section explores learners' 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. It addresses enablers and barriers to learner engagement and participation in the intervention.

Learner attendance

Provider data shows that learner attendance was high. The theory of change required learners to receive 12 embedded maths sessions. While the evaluation could not establish the exact delivery figures, the provider with 9 sessions recorded had an average learner attendance rate of 92%. The other (with 100% delivery recorded) had an average learner attendance rate of 80%. At least 58% learners attended all or part of the twelve sessions.

In interviews, learners cited shift patterns and caring responsibilities as barriers to attending sessions, while others mentioned fatigue after long working days. Interview data revealed that learners used video recordings or resources shared via a WhatsApp group to catch up on missed sessions. However, learner interviews indicated that the availability of these resources varied between providers. The intervention protocol did not specify the provision of catch-up opportunities for learners who missed sessions. This could be added to future iterations to support learners unable to attend all course sessions.

Learner motivations for studying H&SC

H&SC courses attract international learners seeking UK qualifications, people looking to change careers or those pursuing ambitions missed earlier in life. Survey data from the intervention delivered online, which covered 1 provider, showed that 11 learners (of a total achieved sample of 29) had English as a second language. Additionally, 23 respondents completed the survey question regarding degree-level qualifications, with 18 confirming that they held such a qualification, including degrees gained abroad.

Learners interviewed, drawn from both participating providers, included trained H&SC workers from overseas who required UK qualifications, as well as individuals from other sectors seeking a career change. Motivations for studying H&SC included wanting “to do something for my community”, pursuing a childhood dream of becoming a doctor or training for a new career.

> I don't have any medicine background, so this would be a stepping stone for me, to get a degree or diploma in health and social care. – *Leaner interview*

This reasoning was especially prevalent among learners who were educated overseas, with courses functioning as a bridge into the UK H&SC sector, enabling learners from diverse professional and educational backgrounds to retrain and align their skills with local requirements. This evidence suggests that some learners have stronger numeracy skills on entry to their H&SC course than anticipated of the Adult Numeracy Trials’ target population.

Improving skills and knowledge and accessing other educational pathways were key motivations for learners pursuing H&SC courses. The survey data available from 1 provider showed that 25 out of 29 enrolled learners indicated that improving their skills or knowledge was a motivating factor. Other reasons included helping them get better at their jobs (18), helping them get a job they wanted, or helping them get on another course or training programme (10 for both). Learners in interviews often expressed a mixture of these reasons, suggesting that most viewed the course as an opportunity to strengthen their professional competence and expand future options. Interviewees described their course as a pathway to roles such as nursing, senior carer, or specialist positions that require a H&SC degree. A group of learners already working as carers or healthcare assistants viewed the qualification as route to senior positions or university entry, while some attended because their employer required them to do so.

> I’m a carer, and this one is a career enhancement programme… I knew it was going to be a good opportunity for me to learn and get some more knowledge. – *Learner interview*

Reasons for learners to enrol for H&SC alongside a maths courses alongside H&SC could reflect a strategic choice to strengthen career prospects. Several participants recognised the practical value of maths in healthcare tasks.

> I thought doing the maths and the healthcare together, it would just help me get onto my dream job faster. – *Learner interview*

Learner outcomes

The theory of change anticipated that engagement with Embedded Maths would lead to changes in mindset, attitudes, knowledge and application of maths in the workplace and ultimately in other areas of life. Despite the small scale of this evaluation, learner data suggests that Embedded Maths produced these effects, providing evidence for this mechanism. Learner data also indicated that some participating learners expressed interest in further learning beyond their current course, including additional H&SC courses and other maths learning opportunities.

Change in attitude and increased confidence towards maths as a subject

Interview data suggests that participation in the Embedded Maths sessions helped learners recognise and build their mathematical capability, breaking long-standing habits of avoiding numbers. This evidence suggests that Embedded Maths can contribute to addressing maths anxiety and enable learners to approach workplace tasks they had previously avoided.

> If I'm working and there's anything to do with maths, I'd be like, 'No.' I'd shove it off. But I've realised it's really, really vital… it has really helped. – *Learner interview*

The course (or combination of courses) also shifted attitudes towards maths as a subject. Learners reported a more positive outlook on maths after completing the course, which was one of the improvements identified in the theory of change.

> It's built more confidence in myself. It's given me ability to sort out many problems, when I was looking at maths as an enemy but it's actually a really good friend. – *Learner interview*

Participating tutors also observed that learners increased their confidence in maths through the intervention.

Increased confidence in practical application of maths in the workplace

Participants described being better able to handle medication calculations, weight conversions and budgeting as a result of their courses. Some already working in H&SC

roles described how they now checked medication doses independently rather than relying on colleagues or felt more comfortable interpreting patient charts.

> Now I'm able to calculate the time, how long it's going to take me to this place. In terms of medication too, it has also helped me in planning. We did things about planning, budgeting and everything, it really helped. – *Learner interview*

Learners offered practical examples demonstrating how the intervention helped them identify the maths needed for specific tasks.

> When one of my clients was going to the hospital, she was living upstairs on a very big king-sized bed, but because of her mobility when she returned, we needed to calculate how to use a small room downstairs. So, the maths helped, for us to know where would put her bed, keep her things, how we were going to organise a small living room for her. That is where I particularly used the knowledge in maths. – *Learner interview*

This example references a topic included in the intervention and indicates that the intervention can provide job-relevant skills with positive implications for workplace competence and efficiency.

> I feel a lot more confident in doing the majority of what I need to do. – *Learner interview*

Progression to other learning opportunities

Confidence gained through the course encouraged some participants to consider additional maths qualifications. While many learners expressed interest in further H&SC courses, some also wanted to pursue further maths courses. For example, 1 learner said they wanted to study a more advanced maths and accounting courses to support an ultimate goal of running a business. These intentions show that Embedded Maths (potentially combined with FSQ) may encourage a longer-term engagement with maths, directly supporting Multiply's aim to increase adult participation in maths learning.

> I recently downloaded a college site where you can do a financial course as well, so I'm trying to see if I can do the 2 together – *Learner interview*

Perceptions of the Embedded Maths content

Many learners reported not knowing that Embedded Maths was a core part of the H&SC course until the first session, which left some with negative perceptions of maths feeling nervous about what was to come.

> In starting I was seriously confused, and I raised my concern to the faculty as well. – *Learner Interview*

However, despite initial trepidation, attitudes and engagement improved once maths was clearly linked to H&SC workplace tasks. Learners highlighted percentages, ratios, medication calculations, budgeting and planning as particularly helpful. The course experience led to improved understanding of the rationale for Embedded Maths:

> If I am giving medication to any patient or if I'm doing an assessment for patients, these maths calculations are involved there as well. I realised that okay, whatever I'm doing there's a part of maths and healthcare sector go together, and are not separate things. – *Learner Interview*

Explaining maths in the context of H&SC roles made maths meaningful and directly applicable**,** encouraging participation among those with low prior confidence. Delivering maths through real-life care scenarios reframed it as a practical skill rather than an abstract subject, helping learners overcome previous negative experiences. The intervention led to realisations that maths was relevant for their jobs:

> Because for example, measuring of medications, fluid intake, temperature and blood pressure, it was very important to have it for maths. I didn't know that, before the course, I didn't know that it was important in care setting. – *Learner interview*

Where links with occupation were less clear learners found the maths topics less engaging. They struggled to see the point of topics such as fractions and percentages or an activity where they had to calculate the area and layout of a room and budget the costs of decorating it.

4. Conclusions

The findings from this evaluation highlight several features of the Embedded Maths intervention design that require refining to support further test and learn activity and encourage more providers and tutors to engage with the intervention.

4.1 Summary of key findings

Within the 2 providers that delivered the Embedded Maths intervention, tutors were positive about its effect on their practice, including a tutor who was anxious about teaching maths. However, data from withdrawing providers suggests Embedded Maths training did not develop maths confidence in all tutors.

Recommendation: Work directly with tutors in recruitment to build willingness to be involved, ensuring tutors understand maths is already a part of H&SC courses, and they are already covering the key content to reduce their maths anxiety.

The 2 participating tutors made minor adaptations to the Embedded Maths intervention to align with their HS&C course delivery (online and in person) and to meet needs of different learners. The product developers considered these minor changes did not affect the fidelity. The online mode could benefit from more interactive and virtual content to leverage the benefits of technology, while catch up resources could support for in person teaching. Some learners with lower levels of maths knowledge, capability or comprehension needed additional time, and adapted intervention language would support learners with ESOL and SEND needs.

Recommendation: Provide examples for how the Embedded Maths intervention can be adapted to in person and online delivery and identify suitable further adjustments for online learners to better utilise technology. Build in additional flexibility and resources to allow tutors to fully support learners with different needs.

The evaluation revealed that in addition to the Embedded Maths intervention, learners had enrolled on other maths courses. These other maths courses could also be part of other Adult Numeracy Trials as they were offered in the same period. One provider actively encouraged dual registration to increase the likelihood of learners seeing improvements to maths confidence and competence. Dual registration however meant the evaluation could not attribute any perceived improvements solely to Embedded Maths. To understand the relative merit of Embedded Maths as an intervention, it would

need to be trialled in isolation of other maths interventions or intentionally paired with additional maths courses.

The evaluation evidence suggests that Embedded Maths can contribute to addressing maths anxiety and enable learners to approach workplace tasks they had previously avoided. Learners provided examples of workplace H&SC skills involving maths that they could now perform with greater competency. This indicated that the intervention can provide job-relevant skills with positive implications for workplace performance.

Management information shows many more providers initially expressed interest than participated in the intervention. Stakeholders suggested that reducing training intensity would improve accessibility. Minimising, streamlining or condensing elements of the intervention for tutors, while maintaining integrity, could reduce barriers to engagement.

4.2 Lessons learned for future delivery

The original intention of a RCT of the Embedded Maths intervention could not be delivered due to limited take-up among providers. Delivery was contaminated by other Adult Numeracy Trials overlapping with the same learner cohort, preventing a clear assessment of the effect of the intervention on learner outcomes. The current study did not explore the precise interaction between the interventions that learners experienced. Functional Skills qualifications use contextualised examples to teach key concepts. The Embedded Maths intervention uses the practical application of maths concepts in H&SC roles. Given this overlap, these courses' content may complement each other, potentially improving learner outcomes. Before any further test and learn activity, it would be valuable to establish the prevalence of studying FSQ Level 1 maths alongside H&SC Level 2 qualifications among adult learners by analysing ILR data.

4.3 Considerations for further research

Understanding provider contexts, learner cohorts, including the prevalence of FSQ Level 1 maths and other pre-existing maths qualifications and maths confidence, would help determine the optimal conditions for testing the Embedded Maths intervention and inform research design. A 3-arm intervention could explore whether completing an FSQ Level 1 maths qualification alongside the Embedded Maths course affects learner outcomes, compared with learners who complete Embedded Maths as a standalone, or business as usual support through the H&SC qualifications if recruitment proved feasible. Future research could expand outcomes to cover attainment and/or progression of learners to more challenging maths courses. This would reveal how completing the Embedded Maths intervention, enables and motivates learners to further improve their maths skills. Additionally, future research should aim to more systematically capture the workplace effects of improved maths related to H&SC roles.

The evaluation showed that Embedded Maths was effective due to its real-life application to H&SC roles and workplace tasks. Any expansion to other vocational courses would need to consider whether similar occupation relevance could be achieved.

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Appendix 1 Glossary

Adapted Mastery Approach for FSQ Level 1 in Maths: An intervention designed to support teachers of FSQ Level 1 Maths to adopt a 'Mastery' approach. This involves deepening understanding and spending time building from context to abstract reasoning, instead of just 'covering the curriculum'. It includes 15 taught sessions.

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.

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.

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

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

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.

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.

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.

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.

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.

Health and Social Care L2: Health and Social Care (H&SC) refers to a broad sector that includes both healthcare services (such as hospitals, clinics, and GP surgeries) and social care services (such as residential care, home support, and community-based assistance). The H&SC qualification at Level 2 (equivalent to GCSE grades 4–9) is a foundational qualification needed to access a variety of entry-level roles in both health and social care settings. It covers topics such as communication, safeguarding, personal care, and health and safety, and is suitable for those starting out in the sector or looking to formalise existing experience.

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.

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.

Intervention: 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.

Kicktag: Kicktag 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.

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).

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.

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.

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.

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.

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.

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.

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.

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.

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.

Appendix 2 Intervention description

The Embedded Maths intervention

The aim of the Embedded Maths intervention is to support tutors to develop new teaching practices that expose maths as integral to the H&SC curriculum so that tutors and learners understand its relevance and importance. The tutor training is designed to develop tutors' knowledge, understanding and skill in embedding maths approaches, leading to changes in their practice and confidence in their own maths abilities. It is also expected that because of this, they will promote a positive maths mindset to learners. This will lead to improved learner maths competences and confidence, and employment opportunities. Training and support will be key to this process of change in teaching practice. This appendix will cover the tutor training sessions as well as the intervention delivery sessions for learners.

About the tutor training

Tutors engage with a comprehensive package of pre-training (professional development of 10 hours duration) that explains the approach and its rationale and working with the scheme of work and accompanying 12 x 1.5-hour lessons to deliver this to their learners.

The tutor training sessions explore how the intervention lessons meet the aims of the Functional Skills Level 1 in Maths curriculum while also meeting the aims of the H&SC course. The intention is to provide exemplars that can be adapted and used by H&SC tutors, to enable these tutors to embed maths into their vocational teaching effectively. The training package involves lesson plans, schemes of work, training materials and flipped learning. Tutors also engage in the lesson study sessions and ongoing support which involves small groups collaborating with an expert trainer. Table A2.1 lists the titles and key objectives for each of the 4 tutor training sessions.

Table 2: Overview of tutor training sessions

Training session	Objectives	Also includes
1: Introduction to the intervention and embedded maths	Identify the key elements of the intervention List what's involved for tutors Consider attitudes and barriers to learning maths Begin to explore approaches that make vocational maths more engaging and accessible – introduce ALIVE	Exploring identifying maths skills in vocational skills. Discussing number sense & number talk.
2: Bringing vocational maths ALIVE	Investigate what can be learned from learner mistakes and how to respond to them Consider the use of open and closed questions in maths Explore two ALIVE approaches to dealing with problems involving proportion.	Looking at scales and measurements, ratios and percentages Session resources include flipped learning items ahead of session 3
3: The intervention lessons	Review the content of intervention lesson 1 as a whole class Explore and review other lessons in small groups Share these reviews and a key activity with the rest of the class.	Alignment with FSQ Overall structure of all sessions and maths in each session

Training session	Objectives	Also includes
4. Planning for delivery	Discuss ways of making links between lessons, and between maths and the H&SC curriculum Explore the connections between maths skills, and how they underpin vocational skills Plan how to fit the 12 intervention lessons within vocational schemes of work. Discuss next steps in implementing the intervention.	Reflection
Additional items	Lesson study – weekly or fortnightly Checklist of evaluation activity	

Source: Education and Training Foundation course materials

About the learner sessions

Learners engage with the intervention on a weekly basis (typically) and for a dose of 1.5 hours per week across 12 weeks (or 12 sessions). Lessons can be adapted to fit within a current H&SC scheme and content can be added prior or post-delivery of each lesson. The use of a maths glossary is encouraged to support learners to learn and retain relevant maths vocabulary. Table A2.2 lists the titles and key objectives for each of the 12 intervention delivery sessions and outlines how they align to both H&SC content and relevant maths content.

Table 3: Overview of learner sessions

Session Name	Objectives	H&SC content	Maths content
1. Life stages	Identify the different life stages and time frames. Interpret data by outlining factors that affect life expectancy. Round numbers to one decimal place. Identify averages in a health and social care context and calculate the mean and range.	Life span	Converting time (secs, mins, hours, days, weeks, etc.) Multiplying two 2-digit numbers Interpreting data from graphs Averages–mean and range
2. Weights	Identify objects or elements that may need to be weighed in health and social care. Identify different units of weights and explain why objects may need to be weighed using different units. Convert between metric units of weight. Accurately read and record the units from scales. Apply skills with medication. Substitute values into formulas.	Understanding appropriate scale, units of measure	Substitution Working with formulas

Session Name	Objectives	H&SC content	Maths content
3. Measuring	Identify objects or elements that may need to be measured in health and social care. Recognise and apply the appropriate metric units used to measure height and distance. Accurately read and record the units from scales. Convert between metric units mm, cm, m and km. Apply prior learning of averages.	Appropriate use of measures	Working with measurements: mm, cm, m Calculating and converting lengths Measuring Averages
4. Scale plans	Identify how scale is used in health and social care. Understand the relationship between the scale, drawing length and real length. Solve problems involving scale drawing. Find real lengths from scale drawing/scale lengths from real lengths.	Planning a room in a care home	Application of measuring a room Units of measurement Converting between lengths Use of scale and scale factors Ratio

Session Name	Objectives	H&SC content	Maths content
5. Budgeting	Identify the importance of percentages in health and social care. Convert between percentages, decimals and fractions. Calculate percentage increase and decrease using a multiplier. Apply percentage to problem solving.	Keeping warm and temperatures	Percentages Converting Fractions Decimals Percentages Budgeting
6. Fundraising	Identify the importance of fundraising in health and social care settings. Explain the relationship between cost and profit. Apply scale drawing skills to plan a dining room for afternoon tea	Planning an event	Percentages and decimals Scale Measures
7. Healthy lifestyle	Explain the term *obesity*. Describe body weight using professional terminology. Identify the key elements of a healthy diet. Plan a healthy eating menu.	BMI “5 A Day” Balanced diet Calorie consumption	Formulas Charts Data analysis Calculation Percentages
8. Time scheduling	Compare time systems. Convert between 12-hour and 24-hour clocks. Create a time schedule using criteria.	Planning your day as a community carer	Time 12hr/24hr Reading analogue clocks Sequencing

Session Name	Objectives	H&SC content	Maths content
9. Health observations	Investigate the steps of observations and assessments in health and social care settings. Correctly use the terminology connected to observations. Accurately calculate, record and present data.	How to take a pulse and record it Fluid monitoring	Working with time Data handling Units of measurement Averages Chart and graph work
10. Temperature	Use directed numbers in the context of temperature. Convert between units using formulas.	Body temperatures, food temperatures, etc.	Directed numbers Number lines Converting between C and F Calculating temperatures Calculating the range Reading scales
11. Alcohol	Differentiate between different charts and graphs and recognise their main features and uses. Read charts and interpret the information. Represent data in appropriate graphs and charts.	Alcohol: dependency, criminal activity, domestic abuse, mental health	Read charts and interpret information Represent data in appropriate graphs and charts

Session Name	Objectives	H&SC content	Maths content
12. Disability	1. investigate definitions of disability 2. analyse data around disability 3. use qualitative and quantitative data to produce an awareness-raising campaign.	Disability in contemporary times	Interpret data from graphs and charts Work with qualitative and quantitative data Interpret statistics in context

Source: Education and Training Foundation course materials

Appendix 3 Intervention costs

Providers that signed up to a Multiply Education Research Trial were eligible to receive funding based on the number of learners and the number of additional guided learning hours per trial. The provider grant funding allocation was calculated as set out below.

Table 4: Intervention costs

Funding area	Funding level and notes
Admin premium	10% of the planned learner numbers (based on intervention costs) to support learner recruitment, the collection and sharing of required data and supporting delivery of the intervention, including tutor training.
Intervention costs	£7.20 per additional guided learning hour Based on number of additional guided learning hours per trial and recruited number of learners to support delivery of the intervention Plus, area cost and disadvantage cost uplifts added, as applicable.
Additional benefits	The provider received a £1,000 one off payment Tutors received free, high-quality training on how to implement the lessons.

The grant funding spend for the Embedded Maths intervention was £13,390. The training cost was £55,010. This resulted in a total delivery spend for this intervention of £68,400.[16]

The product developer for the Embedded Maths intervention was the Education and Training Foundation (ETF). ETF's deliverables included development of all training materials in line with FSQ Level 1 Maths, delivery of training to tutors, being available for feedback and questions, delivering the ongoing study sessions to tutors, engaging with submitting attendance data and providing quality assurance.

16 Figures rounded to the nearest £10

Appendix 4 Research questions

What underpinned decisions regarding the undertaking and set up of the trial?

- What informed decisions to take part in Multiply trials?
- What informed the decision to implement two trials in the same institution? And, were there any challenges to this?
- Were there any challenges or barriers to implementing Embedded Maths?
- How was the trial communicated to tutors and what were their feelings about taking part?
- How were decisions make regarding the format of the intervention and the training?

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

- How confident were tutors and what were their experiences of teaching maths prior to the training?
- What were tutors' experiences of the training?
- How did tutors experience the materials and ongoing support?
- How suitable were the materials provided to set up and monitor the Embedded Maths?

What was the impact of non-attendance at training sessions?

- What were the barriers and challenges in attending the training for tutors?
- How was non-attendance of training sessions managed and mitigated?

What was the experience of delivering the intervention for Tutors who had not attended some of all the training?

How did tutors experience delivering the intervention?

- How was Embedded Maths delivered and how did it fit into the existing curriculum?

How did taking part in two trials/interventions impact on teaching and learning?

- What were the impacts of taking part in two interventions simultaneously on tutors, learners, learning and the trial?
- How did the two trials interact with each other?
- How did taking part in FSQ impact on the experience and maths teaching and learning of Embedded Maths?

What are the barriers and challenges to delivering the intervention as intended?

- To what extent was the Embedded Maths intervention a change to normal practice
- What support were tutors given to enable the trial to be delivered?
- How was the experience of using Ipsos Data Portal for data submission?

To what extent was the intervention delivered as intended?

- Were any changes made to the intervention format – why and who made those decisions?
- To what extent was the Embedded Maths content implemented into teaching as they were intended to be delivered, or were there adaptions to the content and activities?

What are learners' experiences of the intervention?

- What are learners' experiences of the H&SC course?
- What were learners' experiences and feelings about the maths test?
- What were learners' experiences of the maths content on the H&SC course?

What are the outcomes of maths interventions on H&SC courses for tutors and learners?

- What were the impacts of taking part in Embedded on tutors, learners, learning and the institution?
- How much experience and confidence did learners have prior to taking part in trial?
- What were learners' expectations about maths and H&SC?

- How did Embedded Maths impact on learners' confidence and understanding of maths?
- What have tutors gained from the experience of delivering Embedded Maths?

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

- Reflections on participating in this trial and in future research or trials like this?
- How could we encourage adult education providers/the broader sector to participate in more trials or RCTs like this?

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

- What are the merits of Embedded Maths as a standalone intervention?
- Can or should Embedded Maths be translated for other vocational subjects?
- What, if anything, should be updated or changed for future delivery or wider rollout? Has Embedded Maths content been used in any other Health and Social Care courses since the programme finished?

Appendix 5 Tutor interview topic guide

Introduction

Thank you for agreeing to take part in this interview, and for your help with trialling the Embedding Maths in Health and Social Care 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 Embedded Maths intervention has been deployed, how it has been experienced by tutors and learners and to explore the feasibility of Embedding Maths and maths testing within the Health & Social Care course context in the future.

As part of this evaluation, we will also be interviewing other Health and Social Care tutors who have delivered the programme in other educational settings and learners who have been attending courses where the Embedded Maths intervention has been deployed.

Our discussion today will cover:

- Some background about your teaching, the courses you teach and your maths experience
- Your views and experiences of the training and support you were offered as part of the intervention
- Your views and experiences of integrating and delivering the intervention
- Your views on how learners experienced the intervention

The interview will take around 45 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 six months after the end of the project July 2026
- If afterwards you decide you do not want us to use what you have shared, please email embeddedmaths@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?

Section A: Background information

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

   Probe: Years teaching, any leadership roles, teach any other subjects, do they have a particular specialism in Health & Social Care, are they still practicing H&SC?

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

   Probe: Size, ethos (including about commitment to evaluations or research), catchment area, profile of adult learners, supportive environment

Section B: Prior to the Embedded Maths intervention

3. Prior to the intervention, how confident were you about maths and numeracy generally?
4. Prior to the intervention, did you feel that good numeracy and maths skills were needed to:

   a) teach the course?

   b) be a learner on the course?

   c) work in Health and Social Care Professions?

5. Prior to the intervention, had you taught maths at all before?

If so, probe for detail of what was taught and their confidence and feelings about it, including any anxiety about maths and their ability to teach it.

6. Prior to the intervention, did you go beyond the Health and Social Care curriculum to draw on your own knowledge to enhance learners' maths skills at all?

   Probe for detail if appropriate.

7. When you were initially introduced to it, did you understand the rationale for the Embedded Maths intervention?

   Probe: How did they feel about it, were they supportive?

8. How and when was the Embedded Maths intervention communicated to you?

9. How did you feel about being asked to deliver it?

   Probe: Did they feel they had a choice in delivering it?

Section C: Training and Support

[If all/some of the training was attended ask Questions B1-B4. If no training was attended, skip to B5. Ask all interviewees B6]

10. How important do you think the training was to the delivery of the course?

    Probe: Could they have managed without it? Was the content, amount and resources appropriate for the delivery of Embedded Maths? Could anything have been improved?

11. What did you think of the training?

    Probe: was there too much, not enough, was it too burdensome in terms of time and learning, would they have liked more? Did they find it accessible? Was there an opportunity for CPD?

12. How much of the Embedded Maths training did you attend?

    Probe: How easy was attending, were there any challenges in attending?

13. Did the training have an impact on

    a) how you felt about the Embedded Maths intervention?

    b) your own confidence?

    c) your own knowledge?

    d) seeing potential links between maths and health and social care content?

    e) the likelihood that you would adopt the Embedded Maths intervention into your usual practice?

14. To what extend did you feel supported by ETF during the training? Why do you say that?

    Probe: What was good about them/what needed improving (if anything)

15. I understand that you did not attend all/any of the training sessions. Why was this the case? Is there anything that could have been done to enable you attend more of the training?

    a) Were the resources you received sufficient to be able to deliver the Embedded Maths intervention effectively without the pre-training.

       Probe: Why do you think the resources were enough to deliver effectively, what was good about them/what needed improving (if anything)?

    b) What was the impact of not attending the Embedded Maths training on knowledge, understanding and your confidence and ability to deliver the intervention?

[Ask All]

16. Did you access the ongoing study sessions delivered by ETF for delivery of the intervention?

    Probe: In what form (online or materials) how often did they access/attend? How helpful was it? Suggestions for improvement? Were they given any additional materials, were these helpful.

17. Did you access any alternative/unofficial materials or support to help you with delivery? If so, what support did you access and how did you find this?

Section D: Delivering Embedded Maths

18. Did you deliver all of the Embedded Maths sessions? If not, can you explain why?

    Probe for whether it was a scheduling issue/related to course hours/content, whether it wasn't seen as relevant or another reason?

19. Can you describe how you integrated Embedded Maths into the curriculum and your existing lesson plans and how easy/difficult it was it do that?

    Probe: Did they add Embedded Maths onto an existing session, integrate it, or deliver it as a standalone session? Did they need to write/change lesson plans? Were they able to find the time to plan and teach the intervention? Did it impact on the course hours or other course content? Did it fit seamlessly? Did they face any challenges?

20. Did you face any challenges or barriers to delivering the Embedded Maths lessons and teaching strategies as intended?

Probe: Course content, course format, staffing, student attendance, student barriers such as SEND or language barriers, student confidence. How might these be overcome?

21. To what extent did you implement the Embedded Maths content and activities into your teaching as they were intended to be delivered, or did you make any adaptions to the content and activities?

    Probe: How much and what was changed? Was the decision made pre-delivery or during delivery? Would all learners have had the same adaptions? Were adaptations pedagogical or practical? Were the changes on format or content?

22. Did the Embedded Maths intervention lead to a change in your usual practices?

    Probe: In what way, they covered more/less maths, clearer links between maths skills and practical on the job skills, any other way?

23. Have you continued to use Embedded Maths content in any other Health and Social Care courses since the programme finished?

Section E: Delivering Mastery alongside Embedded Maths

24. How much were you aware of the FSQ Level 1 Maths Mastery content and training?

25. Did the FSQ Level 1 Mastery intervention have any impact on your training and delivery of Embedded Maths?

    Probe: did they liaise with the mastery tutor on delivery and aligning the curricula etc?

26. How were the two interventions (Mastery and Embedded) delivered with the same group of learners?

    Probe: *alternate session, within the same session, different teachers for different sessions, different interventions for different topics or any other form of delivery.*

27. How was the format of delivery communicated to learners?

    Probe: were they given a course outline/handbook or similar written document detailing what was being delivered and how? Were they reminded on a weekly basis which intervention was being followed or only at the beginning of the course?

28. Do you think there was any impact of delivering two interventions to learners at the same time?

a. Confidence and understanding in maths? *Probe for improved/reinforced knowledge, provided additional tools to solve maths problems, no difference, decreased*

b. Confusion between approaches?

c. Ability to apply learning to health and social care settings?

Section F: Outcomes and Reflections

Outcomes For Learners

29. How engaged were learners with the Embedded Maths content, sessions and activities?

    Probe: How much of the intervention did they engage with? Was there a notable difference between learners' engagement with the Embedded Maths content and other parts of the course/other maths related content on the course (if appropriate)/ how previous years students have engaged with this part of the course30 What might have improved learners' participation and engagement with the intervention?

30. How do you think the Embedded Maths intervention impacted on learners?

    Probe: increased/decreased confidence/understanding/improved skills/application to H&SC or progression into further maths?

Outcomes for Teachers

31. Has your opinion changed as to whether this approach is needed or useful within the Health & Social Care course?

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

32. What, if anything, do you feel you have gained from the experience of delivering the Embedded Maths intervention?

    Probe: What – more experience/maths confidence/change in mindset/shift in thinking/opened eyes to contextualised possibilities of teaching? What was it that enabled these gains to emerge?

Thinking to the Future

33. What are your thoughts about Embedded Maths as a concept – do you think it is a good idea?

34. Do you think it is feasible to implement the Embedded Maths intervention as was intended?

    Probe: What, if any, changes would be needed to roll it out on a larger scale - additional training needs, time needs, planning needs.

35. Do you think this approach to embedding maths could be extended to other vocational subject areas? If so, which subject areas?

36. What barriers/enablers do you identify regarding the effectiveness of the Embedded Maths intervention?

Section G: Taking part in the evaluation

37. How was the trial communicated to you?

38. Were you able to feed into the decision to take part in two trials/interventions simultaneously?

    Probe: What were their thoughts on this, did they feel listened to?

39. What motivated you to agree to take part? Did you feel you had a choice?

40. What support, if any, were you given by your institution to attend training and take part in the research? How satisfied were you with this support?

41. How well or otherwise do you think the research project went?

    Probe: Was there anything that worked particularly well / could have been improved e.g. trail readiness packs, pre-trial briefings, discussions or meetings outside of the training?

42. Did you use the Ipsos Data Portal to transfer data on learners taking part in the programme? If so, what was your experience of this? Anything that worked well / could be improved?

43. How did you find the experience of delivering the baseline survey to learners?

    Probe for both: Were there any barriers or challenges to their completing either of these? What, if anything could have improved their experience?

44. What did you think about learners maths being assessed at the end of their course?

45. What are your thoughts on participating in future research or trials like this? Why would you want to be involved, or why not?

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

Stop recording, thank and close.

Appendix 6 Learner interview topic guide

Introduction

Thank you for agreeing to take part in this interview, and for your help with trialling the Embedding Maths within Health and Social Care programme. The Institute for Employment Studies (IES), in collaboration with IPSOS and funded by Department for Education (DfE), is carrying out an evaluation of the programme.

The aim of this part of the evaluation is to provide insights into how the Embedding Maths within the Health and Social Care programme has been deployed, how it has been experienced by teachers and learners and to explore the feasibility of Embedding Maths and maths testing within the Health and Social Care courses in the future.

For learners who also took FSQ maths - We are also interested in your experiences of taking part in two maths interventions at the same time.

As part of this evaluation, we will also be interviewing Health and Social Care tutors who have delivered the programme and other learners who have attended courses where the Embedded Maths intervention has been used.

Our discussion today will cover:

- Your experiences of your Health & Social Care course
- Your experiences and feelings about maths generally
- Your experiences of the maths intervention that was part of your course

The interview will take between 30-45 minutes.

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

- Participation with the interview is completely voluntary.
- Everything discussed in the interview and will only be used for this research.
- 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 six months after the end of the project [date TBC].

If afterwards you decide you do not want us to use what you have shared, please email embeddedmaths@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?

Confirm consent once recording is running

Section A: The Health & Social Care Course

1. Can you tell me a bit about why you decided to take the Health & Social Care course?

Probe: Educational/employment route to the course, what would they like to gain, what would they like to do with the qualification, do they already work in a health and social care setting? Did the provider indicate the courses would run together with the FSQ course and did it influence them to take up the H&SC course?

2. What did you think of the course?

Probe: Did they enjoy it, did they find it interesting (how engaged were they), was it what they expected, did it meet their needs (relate back to answers from question 1)?

3. What do you think worked well/not so well about how the course was delivered? Why do you say that?

Probe: The material/the activities/the tutor/the delivery (e.g. online/in person),

Section B: Experience and Confidence in Maths Prior to the Course

4. Before taking the course, how much experience of maths learning did you have?

Probe: Have they got a maths qualification above L2? If so, was it taken at 16, in the 16-19 study phase or as an adult?
How able did they feel at maths as a subject before this course?

5. Before taking the course, how confident or comfortable would you say you were in using maths in your everyday life? Why do you say that?

6. Thinking back to before you took the course, can you think of an example of when you might have used maths in your everyday life or in a workplace outside of health and social care environments?

7. **a) If they do or have ever worked in Health & Social Care**. Were you using maths skills and knowledge in your Health & Social Care workplace?

Probe: Ask for examples

b) If they have never worked in Health & Social Care. Before taking the course, did you think that maths knowledge and skills would be a part of working in Health & Social Care?

Probe: If yes, which areas did they expect to see maths?

8. Before taking the course, did you expect maths knowledge and skills would be covered as part of the health and social care course?

Probe: Why, why not?

9. When you found out maths would be part of your Health and Social Care course, how did you feel about it?

Probe: Did it influence your decision to take the course?

Section C: The Embedded Maths Intervention

10. How did you feel about taking a maths test at the start of your course?

Probe: Did they feel worried or confident? Were they surprised?

11. Do you think there should be a maths test as part of your Health & Social Care course?

Probe: Do they think it is acceptable, relevant, why/why not?

12. How much Embedded Maths content and activities were there on your course?

Probe: Too much, too little, just right?

13. Did you take part in all the maths content and activities you were offered? If not, why not? What (if anything) could have enabled you to take part in all the content and activities?

Did they struggle with it, did they find the sessions or activities challenging and disengage with the content? Did they complete any required reading/extra reading or homework outside of the classroom?

14. Did you think the Embedded Maths sessions were useful for the content of your Health and Social Care course? Why do you say that?

Probe: Did they find it relevant and/or interesting, did they see the links between the maths and the tasks they might have to complete in a Health & Social care setting?

15. [If relevant] What might have enabled you to engage more with the Embedded Maths content, sessions and activities?

Probe: Did they need to be more relevant, more practical; did they need to be explained differently? Did the sessions need more time/less time?

Section D: Integration of Embedded Maths and FSQ Level 1 Maths

16. Were you taking a Functional Skills Maths at the same time as studying Health and Social Care?

Probe: How did this compare to their experience of maths they were covering as part of their H&SC course (teaching, approach, content)? Did they have a preference/find one easier to learn from? Did one support learning on the other/confuse learning on the other?

17. Were you taking part in the Mastery intervention as part of your functional skills course? **[if no, move onto next section]**

18. How were the two maths elements run?

Probe: Did they cover them on the same week/alternate weeks/on different topics or tasks? Were learners aware when they were supposed to be using Embedded Maths and when FSQ Level 1?

19. Was there any crossover between the two approaches?

Probe: Did they use mastery approaches during Embedded Maths classes and vice versa, was that allowed or encouraged, did any crossover help understanding or cause confusion?

20. What was the impact of following both Embedded Maths and FSQ Level 1 Maths on

a. Confidence and understanding of maths? – *probe for improved/reinforced knowledge, provided additional tools to solve maths problems, no difference, decreased*

b. Ability to apply learning to health and social care settings?

c. Time to cover all aspects of the course?

Section E: Outcomes and Impacts

21. Has the course changed how you feel about maths and how confident you feel in being able to do maths when you need it in everyday life? If so, in how / in what ways?

Probe: A more positive attitude towards maths? If yes, was it Embedded or FSQ or both that caused this change?

22. Has the course helped you to understand the maths in Health and Social Care?

*Probe: Has it helped you **understand** how you might use those skills in your work?*

23. Now you have completed the course, how easy or difficult would you find it to select and use the right maths skills and knowledge to complete tasks in a Health & Social Care setting?

*Probe: how **confident** they might feel using those skills, such as problem solving, in their work? Can they give an example of a task where this might be relevant?*

24. Thinking about the different topics and elements of the course, which elements of the Embedded Maths content or sessions have you found the most useful? And which elements of the Embedded Maths content or sessions have made the most difference to your confidence and knowledge?

25. Are there any elements or topics of the Embedded Maths content or sessions which you found less useful? Why is that?

26. Do you think taking part in the Embedding Maths in Health and Social Care course has made you more or less likely to go on to do other maths courses?

*Probe: if they are **more likely**, then what sort of course would they like to do and why. Have they already started or applied for any other maths courses – if so, which? If **less likely**, probe for why that might be – has anything put them off.*

27. Has your experience of the Embedded Maths content and sessions led to anything else (positive of negative) that we haven't touched on so far?

If necessary, use examples such as, increase in interest in learning in general, confidence in other areas of life etc.

28. Do you think that it is a good idea to embed maths in Health & Social Care courses? Why do you say that?

29. Do you think it is a good idea to embed maths in the similar way for other vocational courses? Why do you say that?

30. Do you think there is anything that should be changed if the Embedded Maths in Health and Social Care programme was run again?

Is there anything they would like to add?

Thank them for their time

Appendix 7 College stakeholder interview topic guide

Introduction

Thank you for agreeing to take part in this interview, and for your help with trialling the Embedded Maths in Health and Social Care 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 Embedded Maths intervention has been deployed, how it has been experienced by tutors and learners and to explore the feasibility of Embedding Maths and maths testing within the Health & Social Care course context in the future.

As part of this evaluation, we will be interviewing Health and Social Care tutors who have delivered the intervention and learners who have been attending courses where the Embedded Maths intervention has been deployed.

Our discussion today will cover:

- Some background about the decision-making process for getting involved in the Multiply trials
- Your setting's experiences of integrating and delivering the intervention
- Your views on how learners/teachers experienced 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 six months after the end of the project, which will be in June/July 2026.

If afterwards you decide you do not want us to use what you have shared, please email embeddedmaths@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?

Section A: Decision making and set up

1. Why did your institution decide to participate in the Multiply Education Research trials?

Probe: what factors influenced this decision? Why did you select the Embedded Maths and FSQ trials in particular?

2. What marketing materials were used to promote the trials?

Probe: How effective were they?

3. What informed the decision to implement both Embedded Maths and FSQ Level 1 Maths Mastery interventions with the same learners? Who made the decision to implement both interventions with the same learners?

Probe: Were teachers consulted, was anyone consulted/told from training or evaluation teams? Was any advice/feedback given on the decision? Were learners consulted and if so, how?

4. Was one trial more easy to adopt than the other one?

Probe: Did Embedded Maths not being randomised have an impact on decision making?

5. Were there any challenges or barriers to being part of the Embedded Maths trial for your institution? If so, what were these?

Probe: Admin, testing, teacher training, scheduling, recruitment etc. Probe for how/ if they were overcome? Was there any opposition from learners?

6. Were the challenges or barriers specific to the Embedded Maths element or were they shared with both interventions?
7. How was the experience of using Kicktag for data submission?
8. How appropriate was the tutor training for the Embedded Maths trial?

Probe: Was it easy/hard to facilitate, was it too much/just right/not enough, any suggestions for improvement

9. Were the two interventions delivered in the format that had originally been planned – if not, what was changed and why? If relevant, were the changes student led/teacher led?

Probe: Was the sequence of the inputs for each run in the order as envisaged by the Education and Training Foundation who designed it or did the provider/tutor redesign it at all?

10. How helpful was the trial readiness pack?

Probe: Was there anything that could have been improved? Did they have all the information they needed?

Section B: Impacts of the interventions

11. What do you think were the impacts of taking part in Embedded Maths

    a) On tutors? For instance, teaching methods or staff confidence? Any specific examples?

    b) On students and their learning?

    c) On the organisation? For instance, are they implementing anything from Embedded Maths into other teaching?

12. What do you think were the impacts of taking part in the two interventions simultaneously

    a. On tutors?

    b. On students and their learning?

    c. On the trial?

13. Do you think that Embedded Maths has potential merit as a standalone intervention?

14. Do you think that Embedded Maths can or should be translated for other vocational subjects?

Probe: Why/ why not? If yes, are there any subjects where Embedded Maths would be particularly suited (providing tutors were adequately trained and supported)

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

Section C: Reflections on being part of Embedded Maths

16. What has been your experience of the contracting and contract management elements of Embedded Maths? Why do you say that?

17. What was your experience of collecting and sharing data in line with the trial requirements?

18. What are your reflections of taking part in Embedded Maths?

19. What are your thoughts on participating in future research or trials like this? Why would you want to be involved, or why not?

20. How could we encourage adult education providers/the broader sector to participate in more trials or RCTs like this? What approaches do you think would work well?

Is there anything you would like to add that has not already been discussed?

[If necessary, ask for contact details of tutors.]

Thank you and close

Appendix 8 Programme stakeholders interview topic guide

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 Embedding Maths in Health and Social Care trial.

The aim of this part of the evaluation is to provide insights into how the Embedded Maths trial has been designed and deployed. We are interested in how Embedding Maths within the Health & Social Care course was managed and what implications that might have for the future of the intervention and other trials.

As part of this evaluation, we will also be interviewing Health and Social Care tutors who delivered the intervention and learners who attended courses where the Embedded Maths intervention has been deployed.

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
- Your views on how learners and tutors experienced 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 six months after the end of the project [June 2026]

If afterwards you decide you do not want us to use what you have shared, please email embeddedmaths@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?

Section A: Background information

1. Can you tell me a bit about your role within ETIO?
2. How were you involved in the Embedded Maths 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?

Recruitment

3. When recruiting providers for the Embedded Maths intervention, what sort of questions, issues or barriers were raised about the programme?
    - 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)
4. What approximate rate of attrition did you see between providers initially signing up for this intervention and then withdrawing?
    - What were the main reasons for providers withdrawing after signing up?
5. At what stage did you discover that the providers intended to deliver two interventions with the same cohort of learners (Embedded Maths and FSQ Level 1 Maths Mastery)?
    - What do you think was behind that decision?

6. If Embedded Maths was to be rolled out further, are there any changes that you think might need to be made to the intervention format or content that might increase adoption / minimise attrition?

7. Is there anything else about the experience of delivering the Embedded Maths trial that we haven't discussed that you think is relevant to understanding the issues/challenges surrounding this?

Thank you and close

Appendix 9 Data Tables

Table 5: Learner Gender

Gender	Setting 1 N	Setting 2 N	Overall N
Male	26	0	26
Female	29	13	42
Overall	55	13	68

Base: 68

Source: MI Data

Table 6: Learner Attendance

Session	Setting 1 N	Setting 1 %	Setting 2 N	Setting 2 %	Overall N	Overall %
One	44	80	12	92	56	82
Two	51	93	11	85	62	91
Three	44	80	11	85	55	81
Four	48	88	12	92	60	88
Five	32	58	11	85	43	63
Six	38	70	13	100	51	75
Seven	44	80	12	92	56	82
Eight	51	93	13	100	64	94
Nine	44	80	13	100	57	84
Ten	48	87	x	x	48	88
Eleven	38	70	x	x	38	70
Twelve	44	80	x	x	44	80
Average	44	80	12	92	56	82

Base: 68

Some shorthand is used in this table. [x] indicates that data is not available

Source: MI Data

Table 7: Learner Age

Age (years)	Setting 1 N	Setting 2 N	Overall N
19-34	34	8	42
35+	21	5	26
Overall	55	13	68

Base: 68
Source: MI Data

Table 8: Learners taking other maths interventions

Intervention	Setting 1 N	Setting 2 N	Overall N
Maths Mastery	52	c	c
Preparation for Maths GCSE	0	c	c

Base: 68
Source: MI Data
Some shorthand is used in this table. Counts of <5 have been suppressed and are displayed with [c]

Table 9: Learning difficulties or health conditions

Health condition	N
Yes, I consider myself to have a learning difficulty or health condition	c
No, I do not consider myself to have a learning difficulty or health condition	c
Total	13

Base: 13
Some shorthand is used in this table. Counts of <5 have been suppressed and are displayed with [c]. Additional values have been secondarily suppressed to prevent deduction of small numbers.
Source: ILR Data
ILR Data was only available for one setting

Table 10: Learner Ethnicity (ILR data)

Ethnicity	Count
White: English, Welsh, Scottish, Northern Irish or British	5
Any other ethnicity	8
Total	13

Base: 13
Source: ILR Data
ILR Data was only available for one setting

Table 11: Learner Employment Status

Employment status	Prior to the first day of learning N	On the first day of learning N
Not in paid employment, looking for work	c	c
Not in paid employment, not looking for work	7	7
Employed for 11 to 20 hours per week	c	c
Total	13	13

Base: 13
Some shorthand is used in this table. Counts of <5 have been suppressed and are displayed with [c].
Additional values have been secondarily suppressed to prevent deduction of small numbers.
Source: MI Data

Table 12: Thinking back to what you were doing in the four weeks just before you enrolled, which best describes what you were doing?

Work status	N
Working as an employee full-time (more than 30 hours per week)	24
Working as an employee part-time (less than 30 hours per week)	c
Other	c
Looking after home or family	c
Total	31

Base: 31

Some shorthand is used in this table. Counts of <5 have been suppressed and are displayed with [c].

Additional values have been secondarily suppressed to prevent deduction of small numbers.

Source: Baseline Survey

Baseline survey data is only available for one of the settings

Table 13: 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?

Care responsibilities	N
No	8
Yes - 9 hours a week or less	c
Yes - 10 to 19 hours a week	5
Yes - 20 to 34 hours a week	9
Yes - 35 to 49 hours a week	c
Total	28

Base: 28
Some shorthand is used in this table. Counts of <5 have been suppressed and are displayed with [c].
Additional values have been secondarily suppressed to prevent deduction of small numbers.
Source: Baseline Survey
Baseline survey data is only available for one of the settings

Table 14: Overall, how confident do you feel working with numbers in everyday life?

Confidence level	N
Neither confident nor not confident	c
Fairly confident	15
Very confident	c
Total	30

Base: 30
Some shorthand is used in this table. Counts of <5 have been suppressed and are displayed with [c].
Additional values have been secondarily suppressed to prevent deduction of small numbers.
Source: Baseline Survey
Baseline survey data is only available for one of the settings

Table 15: Is English your first language?

English as first language	N
Yes	18
No	11
Total	29

Base: 29
Source: Baseline Survey
Baseline survey data is only available for one of the settings

Table 16: Learners reporting qualifications achieved

Qualification achieved	Yes N	No N	Don't know N	Total Responses
A Level or equivalent	12	c	c	23
Any formal qualification (e.g. GCSEs, A levels, BTECs, NVQs, etc.)	23	c	c	29
Degree level or above	18	5	0	23
GCSE or equivalent (e.g. Basic Skills, O levels, CSEs, Functional Skills Level 2)	16	7	0	23

Base: 29
Some shorthand is used in this table. Counts of <5 have been suppressed and are displayed with [c].
[values have been secondarily suppressed to prevent deduction of small numbers
Source: Baseline Survey
Baseline survey data is only available for one of the settings

Table 17: 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?

Maths level	N
Yes - at grade 4 GCSE or above (C or above) or Grade 1 at CSE	7
Yes - at grade 3 GCSE or below (D or below) or Grade 2, 3, 4 or 5 at CSE	c
No	c
Don't know / can't remember	c
Total	16

Base: 16
Some shorthand is used in this table. Counts of <5 have been suppressed and are displayed with [c].
Source: Baseline Survey
Baseline survey data is only available for one of the settings

Table 18: Have you achieved an NVQ or equivalent qualification in any subject?

NVQ level	N
None of these apply	11
Don't know	c
NVQ level 1 or equivalent	c
NVQ level 2 or equivalent (for example BTEC General, City and Guilds Craft)	c
NVQ level 3 or equivalent (for example, BTEC National, OND or ONC, City and Guilds Advanced Craft)	c
Total	23

Base: 23
Some shorthand is used in this table. Counts of <5 have been suppressed and are displayed with [c].

Source: Baseline Survey
Baseline survey data is only available for one of the settings

Table 19: What reasons did you have for signing up to the course?

Reason	N
To improve your skills or knowledge	25
To make you better at your current job	18
To help you complete day-to-day tasks	11
To help you get on another course or training programme	10
To help you to get a job you want	8
Because you were encouraged to by an employer	6
To help children with maths homework	5
Because you were encouraged to by a family member / friend	c
Because it was free	c
For personal enjoyment / interest	c
Because you were encouraged by a Jobcentre Plus work coach	c
Total	29

Base: 29
Some shorthand is used in this table. Counts of <5 have been suppressed and are displayed with [c].
Source: Baseline Survey
Baseline survey data is only available for one of the settings

Table 20: What was your main reason for signing up to the course?

Main reason	N
To improve your skills or knowledge	16
To make you better at your current job	c
To help you get on another course or training programme	c
To help you to get a job you want	c
Total	23

Base: 23
Some shorthand is used in this table. Counts of <5 have been suppressed and are displayed with [c].
Source: Baseline Survey
Baseline survey data is only available for one of the settings

Table 21: Learner Ethnicity (baseline survey)

Ethnicity	N
African	25
Indian	c
Pakistani	c
Total	29

Base: 29
Some shorthand is used in this table. Counts of <5 have been suppressed and are displayed with [c].
Source: Baseline Survey
Baseline survey data is only available for one of the settings

Table 22: Have you ever spent time in the care system?

Time in care system	N
No	25
Yes, as a child or young person	c
Yes, as an adult between 18-25 years old	c
Total	29

Base: 29

Some shorthand is used in this table. Counts of <5 have been suppressed and are displayed with [c].

Source: Baseline Survey

Baseline survey data is only available for one of the settings

Appendix 10 Fields included in the Ipsos Data Portal templates

Learner data fields

Learner data

- Learner reference number (where known)
- Unique Learner Number (where known)
- Title
- First name
- Surname
- Date of Birth (DD/MM/YYYY)
- Email
- Telephone number 1
- Telephone number 2
- Postcode
- Course Start Date (DD/MM/YYYY)
- Consent for their data to be used in trial?
- Consent to be contacted for primary data collection?

Attendance Data

- Session 1: Life Stages
- Session 2: Weights
- Session 3: Measuring
- Session 4: Scale Plans
- Session 5: Budgeting
- Session 6: Fundraising
- Session 7: Healthy lifestyle
- Session 8: Time scheduling
- Session 9: Health Observations

- Session 10: Temperature
- Session 11: Alcohol
- Session 12: Disability

Tutor data fields

- Cohort
- Session
- Was this session delivered (Yes/No)
- If delivered: What date was this session delivered? (DD/MM/YYYY)
- If delivered: How much of the content of the session was delivered?
- If delivered: What was the name of the tutor who delivered this session?

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