

London Schools Excellence Fund

London Lead Teachers in Financial Education, managed by pfeg

Final report

September 2015

Contact Details

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Evaluation Final Report Template

Project Name: London Lead Teachers in Financial Mathematics

London Schools Excellence Fund Round: Round 2

Author of the Self-Evaluation: Russell Winnard

Project Number: 058

Total Approved LSEF funding for Project: £145,643.00

Total Lifetime Cost of the Project: £140,412.33

Actual Project Start Date: 1st October 2013

Actual Project End Date: 31st August 2015

1. Executive Summary

This report outlines the impact of the London Lead Teachers in Financial Education project, providing an overview of the project along with evidence of the impact that delivering mathematics on a greater financial context can have on attainment, engagement and understanding of students, as well as developing essential personal finance knowledge, skills and attitudes.

In conducting the project we wanted to explore whether providing a financial education within mathematics can also enhance student's attainment and engagement. We worked with 26 Lead Teachers within the mathematics departments of 26 different London Schools to provide bespoke support in their development, delivery and assessment of financial mathematics – mathematics delivered using a significant financial context.

Across all of the groups involved in the project there has been a 21.45% increase between the student assessments taken at the beginning of the intervention and those at the end. This can be compared to a 3.06% increase observed in the control group containing students who received exactly the same mathematical content over the intervention period, but which was not delivered using a financial context. This would suggest that providing students with the opportunity to learn mathematics in a greater financial context can have a significant impact upon increasing mathematical attainment.

The project data also suggests that the Lead Teachers have valued the effectiveness of delivering mathematics within a financial context as 100% have embedded financial mathematics into their schools maths curriculum. Further to this the Lead Teachers themselves feel that they have gained important knowledge and confidence to enhance their own teaching practice, as well as having developed their pedagogical practise.

Reasoning for the impact upon attainment appears to be down to the fact that if pupils understand the financial context of a question then it becomes more accessible and they can then focus on the maths required. In addition to this, the data collected shows that Lead Teachers also believe using a financial context increases pupil engagement, and this raised engagement, which may also have an impact upon attainment.

Within the core project the 26 Lead Teachers worked directly with a total of 2,236 students, however the wider project has reached in excess of 800 teachers and 20,000 students via dissemination events, internal staff sharing and a legacy resource which has been made freely available on the pfe website for teachers to download and use. We anticipate that the reach of this project will continue to grow as more teachers access this legacy resource and trial delivering maths in a greater financial context within their own schools.

2. Project Description

The London Lead Teachers in Financial Education project worked with experienced mathematics teachers, often Heads of Department and members of Senior Leadership, to develop a greater financial context within specific areas of the maths curriculum. Through a review of past GCSE maths papers (2012-2014) it is clear that in both foundation and higher tier papers there can be in excess of 25% of the paper which contain questions within a financial context. These questions set within a financial context are frequently more poorly answered than the majority of other questions within the paper, particularly, but not exclusively, in relation to Foundation tier learners. Further exploration of the Chief Examiners comments in relation to these questions reveals that in some cases the reason students are not achieving as well as they should is down to not understanding the context of the question, rather than a lack of mathematical ability. This issue around answering questions

in a financial context is in contrast to the national mathematics results which have been steadily improving year on year, with 63.3% of learners achieving an A* - C grade in 2015.

The recent changes to the mathematics National Curriculum in September 2014, and first examined in 2017, has an increased focus on problem solving and reasoning within relevant contexts. Up to 35% of the final examination will focus on this area. Money and finance already provide a real and relevant context for such problem solving and reasoning, and it can be assumed that this context will only increase once the new curriculum examinations begin in 2017, indeed some of the sample paper produced by the exam boards have included a substantial number of questions using finance as a context.

We initially looked for research to identify any other studies into the delivery of mathematics in a greater financial context. This desk based research found no evidence of any previous work in this area, although we were able to identify a number of papers which made the connection between the provision of greater real and relevant problems solving opportunities with an increase in attainment and engagement:

The Ofsted report 'Mathematics: Made to Measure'

(<http://www.slideshare.net/Ofstednews/mathematics-madetomeasure>) highlights that too much secondary school mathematics teaching is focused purely on 'the test', and not on more rounded contextual problem solving. The report also acknowledges that many teachers continue to struggle to develop the skills of using and applying mathematics systematically.

The Vorderman report 'A World Class Mathematics Education for all Young People'

(<http://www.tsmresources.com/pdf/VordermanMathsReport.pdf>) made reference to the importance of financial numeracy and that this should be included within the mathematics curriculum. Indeed, within the new key stage 3 and 4 National Curriculum, 2014, we see this recommendation has been implemented and references to financial mathematics are made throughout areas of the curriculum. This emphasises the importance of financial mathematics, although there is a general unawareness amongst maths teachers of the extent to which personal finance can be used as a context for delivering different areas of the curriculum and how it can improve their students engagement and attainment.

Using the information gathered through our desk based research and the analysis we had performed on the past GCSE papers and examiner comments it was felt that by developing teacher's knowledge and confidence in delivering maths in a greater financial context this could have a significant impact on the mathematical attainment of learners when answering questions using a financial context.

This project aimed to improve students' engagement and attainment in mathematics by framing content within a financial context. In order to achieve this, the project worked with 26 Lead Teachers in 26 different London schools, to increase their knowledge, skills, and confidence in financial mathematics. The schools were recruited via an expression of interest sent out in the pfege e-newsletter. Those schools that responded to the expression of interest completed a survey which established their location, school details and their subject background and experience of the potential Lead Teacher. From these expressions of interest we were then able to select the 26 schools in which we worked. The main driver for this being the teachers level of experience and ability to influence within their school. This was considered the most important criteria because the Lead Teachers would need to disseminate their learning to others within their Department, and the rest of the school, and to have a level of influence such as Head of Department or Assistant Head made this far more likely to happen.

The project spanned from October 2013 to August 2015, with the bulk of support to the Lead Teachers taking place from April 2014 to June 2015. Each of the Lead Teachers have been provided with bespoke training and 1-1 support from a specialist pfege consultant. The

consultants have a wealth of experience within the field of financial education and those selected to work on this project also have a substantial background in mathematics education. The consultants worked with the Lead Teachers to select; the most appropriate area of their curriculum to develop, the student group(s) with which they worked, and the materials to develop, as well as guiding them through the assessment of impact. This use of consultants was crucial in facilitating teachers and schools engagement through the project, and the time the consultants could spend with the teachers was extremely welcome.

Those Lead Teachers who have participated in the project have disseminated their experience and the outcomes of their students more widely within the London maths community. As part of the project we provided opportunities for this via dissemination events, a sharing area on the National Centre for Excellence in Teaching Mathematics (NCETM) website and a legacy resource identifying the good practise from the project, but would also hope that it is continued beyond the lifetime of the project.

Rather than having a particular focus on geographical areas within London the project aimed to work with experienced mathematics teachers capable of driving an initiative forward within their own school as well as sharing their experiences and learning with colleagues from other schools. This was important in ensuring that the project had an in-built level of sustainability.

In addition to enhancing mathematical achievement the project also aimed to develop the financial capability of the pupils it reaches. Being able to make informed financial decisions is an important life skill used way beyond the classroom.

Based upon the outcomes of this project we are looking to secure funding to extend this intervention beyond London. This will require evaluation to ensure rigorous monitoring of impact. It would be our intention that this be carried out independently, preferably as part of an academic evaluation in partnership with a university.

2.1 Does your project support transition to the new national curriculum? Yes

The London Lead Teachers project has spanned the introduction of the new National Curriculum for Mathematics. A consultation version of the new curriculum was available at the beginning of the project and therefore a good understanding of the direction of the new curriculum was employed from the beginning.

The new Mathematics curriculum at key stage 3 and 4 specifically references the use of 'financial mathematics' and the use of finance as a context to learning. In addition to this there is an increased focus within the new curriculum on mathematical reasoning and problem solving in real and relevant contexts. The provision of a financial context obviously supports this.

2.2 Please list any materials produced and/or web links and state where the materials can be found. Projects should promote and share resources and include them on the [LondonEd website](#).

- An area on the **pfeg** website has been set up to provide a brief overview of the project:
<http://www.pfeg.org/projects-funding/projects/london-lead-teachers>
- Following the monitoring visit in May we were asked to complete a blog for LondonEd in relation the project. The article is publically available at:
<http://londoned.org.uk/general-news/london-lead-teachers-in-financial-mathematics/>

- A legacy resource has been developed as part of this project. This has been made available on the pfeg website for all teachers to be able to download for free. The resource looks at how a financial context can be integrated into each of the areas of the secondary Mathematics curriculum and provides ideas and examples of assessment which can be used to replicate the project:

<http://www.pfeg.org/resources/details/maths-matters-using-financial-contexts-secondary-mathematics>

3. Theory of Change and Evaluation Methodology

Please attach a copy of your validated Theory of Change and Evaluation Framework.

3.1 Please list **all** outcomes from your evaluation framework in Table 1. If you have made any changes to your intended outcomes after your Theory of Change was validated please include revised outcomes and the reason for change.

Table 1- Outcomes

Description	Original Target Outcomes	Revised Target Outcomes	Reason for change
Teacher Outcomes			
Increased subject knowledge and greater awareness of subject specific teaching methods	All 12 lead teachers report an increase in knowledge of financial education and teaching methods	Up to 27 lead teachers report an increase in knowledge of financial education and teaching methods	Additional funding received
Increased teacher confidence	All 12 lead teachers report an increase in confidence within their own subjects	Up to 27 lead teachers report an increase in confidence within their own subjects	Additional funding received
Delivery of higher quality teaching including subject-focused and teaching methods	Higher quality classroom teaching reported by at least 9 Lead Teachers (75%)	Higher quality classroom teaching reported by at least 20 Lead Teachers (75%)	No change
Use of better subject-specific resources	Increase in the uptake of financial education resources available	Increase in the uptake of financial education resources available	No change
Pupil Outcomes			
Increased educational attainment and progress	10% of teachers supported would report a potentially large impact on attainment 30% would report a potentially moderate impact on attainment 30% would report the potential for some impact on attainment	10% of teachers supported would report a potentially large impact on attainment 30% would report a potentially moderate impact on attainment 30% would report the potential for some impact on attainment	No change

Pupils showing greater engagement, enthusiasm and understanding of the academic subject when combined with financial education.	Greater engagement, enthusiasm and understanding reported by Lead Teachers	Greater engagement, enthusiasm and understanding reported by Lead Teachers	No change
School System / 'Culture Change' Outcomes			
Teachers/ schools involved in intervention making use of the networks, other schools and colleagues to improve subject knowledge and teaching practice	Network events well attended and represented by lead teachers as measured using attendance register Positive feedback on networking event	Network events well attended and represented by lead teachers as measured using attendance register Positive feedback on networking event	No change
Programme activities/ model is embedded in department/ schools/ council planning beyond the intervention group	50% of teachers attending the network events will go on to deliver mathematics using a financial context within the lifespan of this project.	50% of teachers attending the network events will go on to deliver mathematics using a financial context within the lifespan of this project.	No change
Teachers/ schools outside the intervention group have the opportunity to increase their subject knowledge through the programme	Attendance and representation at networking events 50% of teachers attending the network events will show an increase in their knowledge of mathematics in the context of financial education after the event.	Attendance and representation at networking events 50% of teachers attending the network events will show an increase in their knowledge of mathematics in the context of financial education after the event.	No change
Knowledge, and use, of resources available to support financial education increases for Lead Teachers	Wider knowledge of the resources available to support financial education	Wider knowledge of the resources available to support financial education	No change

3.2 Did you make any changes to your project's activities after your Theory of Change was validated? No

3.3 Did you change your curriculum subject/s focus or key stage? No

3.4 Did you evaluate your project in the way you had originally planned to, as reflected in your validated evaluation plan?

When the evaluation plan was developed we were unsure of whether we would be able to provide control groups to compare against our test groups due to the limitations on teachers time and accessibility to appropriate control group classes. However, over the duration of the project we were able to operate such control groups, and this is in addition to our original evaluation framework.

The test group was made up of 260 learners. This is substantially smaller than the 2,236 young people which the Lead Teachers worked with in total. The main reasons for this were:

- There was a greater than anticipated number of students directly involved in the project. This meant that teachers just did not have the capacity to involve all of the students in the assessment. Teachers tended to conduct the assessment either one class, or group of students.
- Lead Teachers tended to want to conduct the project with just one class, or group, in the first instance prior to engaging further students. They wanted to be able to establish impact on this class or group before involving other students.

The test groups were all identified by the Lead Teachers. We recognised that they are all experienced professionals who know their students well. They were also constrained by the classes or group which they were timetabled to deliver to, so this had a key bearing on which groups of young people were selected to participate. Following analysis of the students the one area this may have impacted upon is the spread of ability of students involved. As we had chosen to work with experienced Lead Teachers they tended to teach the slightly more able students, with the predominate focus being on middle attainers who sit around the grade C/D borderline. In all other aspects we feel we did achieve a representative sample of students.

The data used in this report consist of only that which we were able to collect both pre and post from the same students. In instances where a student was absent from either a pre or a post assessment their data has been removed and they do not form part of the 260 sample size. We had four instances of schools providing pre data but no comparable post data and these too have not been used for the purposes of this report.

The control groups were more difficult for a school to engage in. The main reason for this was that they were restricted by the classes and groups they were timetabled to teach. When selecting a control group we needed the students to be comparable, including the same age and ability, which meant that the majority of Lead Teachers were unable to provide a control group. Five Lead Teachers however did, provide a total control group size of 101 students. These all had groups that were the same age and ability (deciphered through predicted maths GCSE results) and taught by the same Lead Teacher as their respective test group.

The control group took exactly the same pre and post assessment as the respective test group in the school. They were delivered exactly the same maths skills and processes by the Lead Teacher as the test group but this was not delivered using a financial context. All of the assessments used finance as a context for the mathematics, and had previously appeared in GCSE examination papers. The outcomes for the control group therefore reflect students who are presented with such GCSE questions without having been delivered the mathematics within a financial context.

4. Evaluation Methodological Limitations

4.1 What are the main methodological limitations, if any, of your evaluation?

The majority of attainment data has been gathered using pre and post assessment methods. We would have preferred more schools to also have employed a control group to provide a comparison, but has not been possible due to logistics within the school. Most of the Lead Teachers only teach one class within the same year group and as such it was not possible to also employ a control group. The limitations of the Lead Teachers capacity and logistics of the groups they taught has meant that our sample sizes are relatively small.

Assessing teachers own knowledge and confidence in delivering mathematics within a financial context has been explored predominantly through self completed questionnaires. There can be a level of subjectivity within this; however, being very aware of teacher's time and commitments, to employ a completely objective test could well have presented a barrier to being involved with the project. A copy of the questionnaire has been attached in Appendix 1.

It was important to us that teachers were able to select the area(s) of the maths curriculum that they feel is suitable for a financial context to be delivered to their pupils. Our consultants were able to guide them in this decision, but it must be a collaborative choice that best meets the needs of the pupils. This means that the curriculum area focused on differs from one school to another. This may contribute to a level of variance in the attainment results; however we have attempted to reduce this through the use of appropriately levelled GCSE standard questions specific to the curriculum area they are covering.

4.2 Are you planning to continue with the project, once this round of funding finishes? Yes

If **yes**, will you (and how will you) evaluate impact going forward?

We are looking to secure funding to extend this project beyond London. This will require evaluation to ensure rigorous monitoring of impact. It would be our intention that this be carried out independently, preferably as part of an academic evaluation in partnership with a university.

5. Project Costs and Funding

Table 2 - Project Income

	Original ¹ Budget	Additional Funding	Revised Budget [Original + any Additional Funding]	Actual Spend	Variance [Revised budget – Actual]
Total LSEF Funding	£74,711	£70,932	£145,643	£140,412.33	-£5,230.67
Other Public Funding					
Other Private Funding					
In-kind support (e.g. by schools)					
Total Project Funding	£74,711	£70,932	£145,643	£140,412.33	-£5,230.67

List details in-kind support below and estimate value.

¹ Please refer to the budget in your grant agreement

Table 3 - Project Expenditure

	Original Budget	Additional Funding	Revised Budget [Original + any Additional Funding]	Actual Spend	Variance Revised budget – Actual]
Direct Staff Costs (salaries/on costs)	£6,388	£13,500	£19,888	£1,260	-£18,628
Direct delivery costs e.g. consultants/HE (specify)					
Management and Administration Costs	£3,048	£1,600	£4,648	£6,248	£1,600
Training Costs	£44,694	£31,429	£76,123	£73,606.83	-£2,516.17
Participant Costs (e.g. Expenses for travelling to venues, etc.)					
Publicity and Marketing Costs		£14,884	£14,884	£19,120	£4,236
Teacher Supply / Cover Costs					
Other Participant Costs					
Evaluation Costs	£20,581	£9,519	£30,100	£40,177.50	£10,077.5
Others as Required – Please detail in full					
Total Costs	£74,711	£70,932	£145,643	£140,412.33	-£5,230.67

5.2 Please provide a commentary on Project Expenditure

The project expenditure increased midway through the project due to securing additional LSEF funding.

(Maximum 300 words)

6. Project Outputs

Please use the following table to report against agreed output indicators, these should be the same outputs that were agreed in schedule 3 of your Funding Agreement and those that were outlined in your evaluation framework.

Table 4 – Outputs

Description	Original Target Outputs	Revised Target Outputs [Original + any Additional Funding/GLA agreed reduction]	Actual Outputs	Variance [Revised Target - Actual]
No. of schools	12	27	26	-1
No. of teachers	102	252	827	575
No. of pupils	12,240	22,240	20,895	-1,345
Workshops/conferences	2	4	4	0

7. Key Beneficiary Data**7.1 Teacher Sub-Groups** (teachers directly benefitting counted once during the

project)

The number of benefiting teachers has been calculated as those Lead Teachers which have worked directly with one of our education consultants. This was calculated in August 2015.

Table 5 – Teachers benefitting from the programme

	No. teachers	% NQTs (in their 1st year of teaching when they became involved)	% Teaching 2 – 3 yrs (in their 2nd and 3rd years of teaching when they became involved)	% Teaching 4 yrs + (teaching over 4 years when they became involved)	% Primary (KS1 & 2)	% Secondary (KS3 - 5)
Project Total	26	0	11.54	88.46	0	100

7.1.2 Please provide written commentary on teacher sub-groups e.g. how this compares to the wider school context or benchmark (*maximum 250 words*)

For the purposes of this project we targeted specifically secondary school teachers delivering mathematics, therefore all Lead Teachers are secondary. The project also aimed to work with those teachers who have a greater level of influence within the school, and therefore in the majority of cases the teachers worked with had in excess of 4 years experience and often held a position of authority such as Head of Department. This was deemed to be important for achieving ‘buy-in’ to the project as well as ensuring that the project was disseminated further within the school and beyond.

7.2 Pupil Sub-Groups (these should be pupils who directly benefit from teachers trained)

Please provide your definition for number of benefiting pupils and when this data was collected below (*maximum 100 words*)

We have defined a benefiting pupil as one that was delivered to directly by a Lead Teacher. This demographic data was collected throughout the project from the Lead Teachers and through the use of publically available data.

Tables 6-8 – Pupil Sub-Groups benefitting from the programme

These are all of the student who the 26 Lead Teachers reached within their own schools. It does not include the students reached by the teachers who were disseminated to by the Lead Teachers. The reason for this is that we worked directly with the Lead Teachers and were able to collect this information from them directly. We did not have an on-going relationship with the teachers to whom the Lead Teachers disseminated, and therefore could not collect this information on those students.

	No. pupils	% LAC	% FSM	% FSM last 6 yrs	% EAL	% SEN
Project Total	2,236		23.2%	35.6%	41.3%	18.7%
School 1						
School 2						

School 3						
School 4						

	No. Male pupils	No. Female pupils	% Lower attaining	% Middle attaining	% Higher attaining
Project Total	1,074	1,162	14.1%	34.8%	51.1%
School 1					
School 2					
School 3					
School 4					

	% Asian Indian	% Asian Pakistani	% Asian Bangladeshi	% Asian Any Other background	% Black Caribbean	% Black African	% Black Any Other Background	% Mixed White & Black Caribbean	% Mixed White & Black African	% Mixed White & Asian	% Mixed Any Other Background	% Chinese	% Any other ethnic group
Project Total	6.3	4.6	1.4	10.2	2.8	16.2	6.9		4.1		4.2	3.4	2.2
School 1													
School 2													
School 3													
School 4													

	% White British	% White Irish	% White Traveller of Irish heritage	% White Gypsy/Roma	% White Any Other Background
Project Total	24.5	0.6			12.4
School 1					
School 2					
School 3					
School 4					

7.2.1 Please provide a written commentary on your pupil data e.g. a comparison between the targeted groups and school level data, borough average and London average (*maximum 500 words*)

The pupil data has a slight bias towards those higher ability students with 51.1% of participants being classed as high attaining. The Lead Teachers were given the choice of which students to engage in the project and there was a feeling that this was more appropriate for middle and higher attaining students. This may well be down to the C/D borderline effect – where teachers will focus most attention on those students who are around the C/D GCSE grade to ensure they achieve the C grade rather than the D.

There is a fair representation across the ethnicity data.

8. Project Impact

8.1 Teacher Outcomes

Date teacher intervention started: March 2014

Table 9 – Teacher Outcomes: teachers benefitting from the project

The 1st Return will either be your baseline data collected before the start of your project, or may be historical trend data for the intervention group. Please specify what the data relates to.

Target Outcome	Research method/ data collection	Sample characteristics	Metric used	1 st Return and date of collection	2 nd Return and date of collection
Increased subject knowledge and greater awareness of subject specific teaching methods	<i>E-survey and hardcopy survey</i>	<i>26 respondents from 26 Lead Teachers</i>	<i>Mean score based on a 1-10 scale (1 – Very low, 10, Very High)</i>	<i>Mean score- 6.0, Collected March 2014</i>	<i>Mean score- 8.0, collected up until July 2015</i>
Increased teacher confidence	<i>E-survey and hardcopy survey</i>	<i>26 respondents from 26 Lead Teachers</i>	<i>Mean score based on a 1-10 scale (1 – Very low, 10, Very High)</i>	<i>Mean score- 6.0, Collected March 2014</i>	<i>Mean score- 8.0, collected up until July 2015</i>
Use of better subject-specific resources	<i>E-survey and hardcopy survey</i>	<i>26 respondents from 26 Lead Teachers</i>	<i>% of Lead Teachers using subject specific resources in open question.</i>	<i>37.5%, March 2014</i>	<i>100%, July 2015</i>

*** Please note that the teachers outcome of ‘Delivery of higher quality teaching, including subject-focused and teaching methods’ has not been included within the above table. This proved to be extremely difficult to quantify. We gathered anecdotal examples of how the intervention had had a positive effect on teachers quality of teaching, and most notably a change in approach to the way in which mathematics teaching is delivered, but this is not necessarily about improved quality, rather than using different teaching approaches.**

Table 10 – Comparison data outcomes for Teachers [if available]

Target Outcome	Research method/ data collection	Sample characteristics	Metric used	1 st Return and date of collection	2 nd Return and date of collection
<i>e.g. Increased Teacher confidence</i>	<i>e.g. E-survey</i>	<i>e.g. 100 respondents from a total of 200 invites.</i>	<i>e.g. Mean score based on a 1-5 scale (1 – very confident, 2 –</i>	<i>e.g. Mean score</i>	<i>e.g. Mean score</i>

		<i>The profile of respondents was broadly representative of the population as a whole.</i>	<i>quite confident, 3 neither confident nor unconfident, 4 - quite unconfident, 5 – very unconfident)</i>		

8.1.1 Please provide information (for both the intervention group and comparison group where you have one) on:

The teacher group is made up of the 26 Lead Teachers which were worked with directly as part of the project. These were selected, as outlined in Section 2, according to their level of experience and influence within the school. We worked directly with these 26 Lead Teachers in 26 different secondary schools over the duration of the project. These Lead Teachers went on to disseminate the outcomes and pedagogy to a further 801 teachers – making a total teacher reach of 827. For the purposes of the project evaluation it was only the 26 Lead Teachers which were evaluated (a longer time scale would have been required to properly evaluate the 801 teachers to whom the Lead Teachers disseminated to).

All of the Lead Teachers completed an online survey at the beginning of the project prior to any involvement. This acted as a baseline data. Following the intervention of the consultant working 1:1 with the teacher, and the teacher having delivered to a cohort of students the second hardcopy survey was used to record any changes. They were delivered in hardcopy as we used the opportunity of the majority of the Lead Teachers being at a dissemination event to collect this feedback, rather than an online survey which may have been more challenging to ensure the returns.

The data shows that teachers have developed their knowledge and confidence in delivering mathematics to include financial context mathematics. This was a key objective for the project and therefore, through the project intervention, we expected to observe a positive impact upon this. The mean scores show that there was a 33.33% increase in both knowledge and confidence of the Lead Teachers to deliver mathematics in a greater financial context. The baseline scores achieved were relatively high to start with, possibly because we chose to work with more experienced Lead Teachers, so it remains pleasing that the project was still able to positively impact upon the Lead Teachers. If less experienced teachers had been worked with we may well have observed a greater increase in knowledge, and confidence, although this would be due to them starting from a considerably lower position.

Teachers agreed that the project had had a significant impact on the attainment, knowledge and understanding of their students. This was mainly collected through the teacher questionnaire and focus groups, but also anecdotally to the consultants with which the Lead Teachers worked. The below is a representative example of teacher comments:

‘...as a result of the project and working with PFEG, this particular cohort of participants have improved their knowledge and understanding of questions in a financial context, and I expect to see further reaching results in GCSE style examinations, such as end of year exams and mocks in year 11.’

Laura Turner, St Columba’s Catholic Boy’s School

8.2 Pupil Outcomes

Date pupil intervention started: April 2014

Table 11 – Pupil Outcomes for pupils benefitting from the project

The 1st Return will either be your baseline data collected before the start of your project, or may be historical trend data for the intervention group. Please specify what the data relates to.

Target Outcome	Research method/ data collection	Sample characteristics	Metric used	1 st Return and date of collection	2 nd Return and date of collection
Increased educational attainment and progress	<i>Pupil assessment data</i>	<i>Collected for 260 of the 2,236 students. The profile of respondents matches that initially targeted in the Theory of Change.</i>	<i>Average % score achieved in levelled GCSE assessment.</i>	<i>The average % score prior to intervention was 30.95%. Collected from April 2014</i>	<i>The average % score following the intervention was 52.39%. Collected from May 2014 to July 2015</i>
Pupils showing greater engagement, enthusiasm and understanding of the academic subject when combined with financial education.	<i>Teacher survey</i>		<i>Retrospective question asked of teachers</i>	<i>No baseline</i>	<i>100% of teachers agreed that their students show greater engagement, enthusiasm and understanding following participation.</i>

Table 12 - Pupil Outcomes for pupil comparison groups [if available]

Target Outcome	Research method/ data collection	Sample characteristics	<i>Metric used</i>	1 st Return and date of collection	2 nd Return and date of collection
Increased educational attainment and progress	<i>Pupil assessment data</i>	<i>e.g. Characteristics and assessment data collected for 97 of 100. The profile of respondents matches that initially targeted in the Theory of Change.</i>	<i>Average % score achieved in levelled GCSE assessment.</i>	<i>The average % score prior to intervention was 25.55%</i>	<i>The average % score following the intervention was 28.61%</i>

8.2.1 Please provide information (for both the intervention group and comparison group where you have one) on:

The test group was made up of 260 students across the schools involved in the project. These are all paired results, in that we have only included those students who have taken a pre and post assessment. In total there were 286 students that took the pre assessment and 279 students that took the post test. Between pre and post assessments the number of paired results was 260. It was these paired results that were used for the evaluation.

The Lead Teachers selected the most appropriate group to be used as the test group. There were restrictions in relation to the classes they taught and the timetabling of lessons which meant it is more appropriate for us to work collaboratively with the Lead Teachers to determine the test group than to impose this.

The control group was made up of 101 students across the schools involved in the project. These are all paired results, in that we have only included those students who have taken a pre and post assessment. In total there were 112 students that took the pre assessment and 115 students that took the post test. Between pre and post assessments the number of paired results was 101. It was these paired results that were used for the evaluation.

Where they could be accommodated control groups were selected by the Lead Teachers from the participating schools. We ensured that these were students of the same age and ability (based upon mathematics GCSE grade predications) as those in the test group at the school. Not all schools were able to provide a control group because of limitations on the number of lessons taught with different classes of the same age and ability.

In order to reconcile the student numbers to those in Table 6-8 the following additional table has been produced:

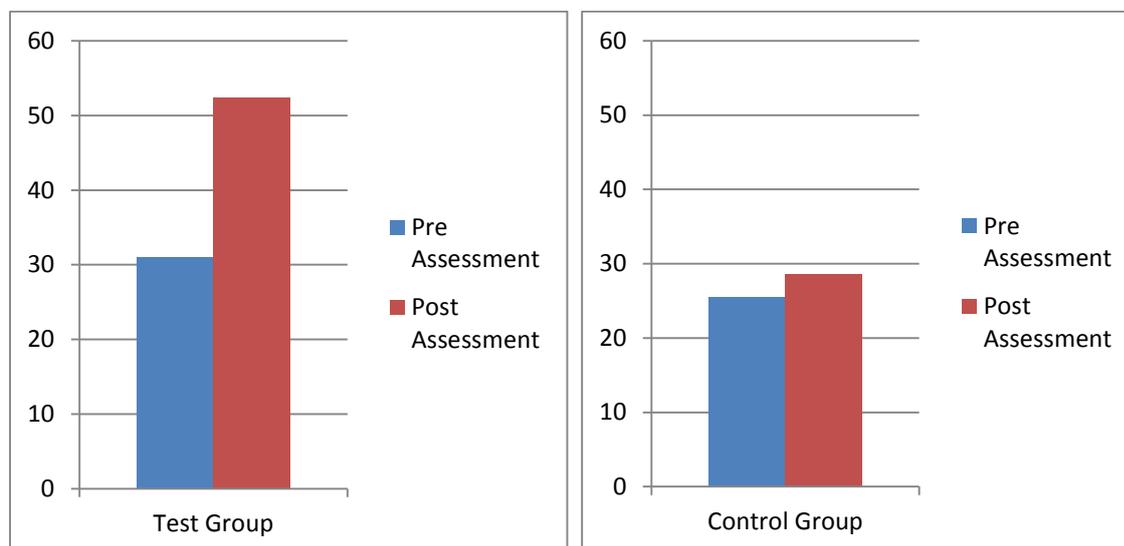
No. of students in the test group	260
No. of students in the control group	101
No. of students outside the test and control groups supported by the Lead Teacher	1,875
No of students delivered to by the 801 teachers disseminated to by the Lead Teachers	18,659
TOTAL	20,895

In all schools the lead Teacher worked initially with just one test group, and it was this test group on which all of the project evaluation was conducted (the 260 students). Following this nearly all the Lead Teachers went on to support further classes (1,875) although this was only after the intervention had been complete with their test group, and as such the timescales were not appropriate to also conduct evaluation on these students. We found that the Lead Teachers wanted to be able to prove the concept of the intervention with the test group before extending it out to further students. They obviously also needed to have completed the intervention before disseminating to others more widely, which is why the 18,659 students were not included in the evaluation.

The graphs below highlight the difference in impact observed between the test group of students and those within the control groups. Test groups were delivered lessons where the mathematics they were learning was delivered in a financial context. In the control groups the students learned the same mathematical content but not in a financial context.

There is a small difference in the starting point of the test group (30.95%) compared to the control group (25.55%). This is a statistically significant difference ($P=0.0259$), however the assessments taken by each group were standardised (using GCSE questions), and our focus on this project was on the distance travelled, which is significantly more in the test group compared to the control group.

Test group Vs control group pre and post average assessment percentage score.



‘I enjoyed the lessons and feel confident about doing questions like the ones we did in class.’

‘I think it will be more useful in life than many other maths topics’

‘The lessons made it easier for me to understand the context’

‘It was more practical’

‘It is good to practice maths in a non boring way, instead of using a textbook which can be tedious and repetitive’

‘I don’t know how I will ever need to use things like trigonometry, but I know I will use this in the future’

‘Doing maths like this is good for the future and will help you’

Sample of student’s qualitative feedback

To provide a practical example of one of the unexpected outcomes of the project we have included an example from Highgate Wood School. The teacher had decided to focus the area of learning on volume. She provided the context of having to set up an ice cream business and the students needed to establish the most cost effective sizes different shaped ice creams. In summarising the learning the teacher asked the students to move the learning objectives they had covered into a table showcasing ‘Things I learnt from my teacher’, and ‘Things I learnt for myself or my group’. The picture below show the result, and the group learnt everything except for one objective for themselves. This was an unexpected outcome, but one that was observed in other schools.

Ice cream business self evaluation

Things I learnt from my teacher	Things I have learnt for myself or my group
The structure of a report	<ul style="list-style-type: none">• To work out volume of a prism• To make positive contributions to my group• To work out volume of cuboid• To work out the % of chocolate in a choc-ice• To work out volume of sphere• To work out volume of cylinder• How to write a complete answer to a question

8.3 Wider System Outcomes

Table 13 – Wider System Outcomes

Target Outcome	Research method/ data collection	Sample characteristics	Metric	1 st Return and date of collection	2 nd Return and date of collection
Teachers/ schools involved in intervention making use of the networks, other schools and colleagues to improve subject knowledge and teaching practice	<i>Evaluation form at dissemination events</i>	<i>Number of teachers</i>	<i>Number of teachers disseminated to at events</i>		<i>77 Delegates having attended dissemination events</i>
Programme activities/ model is embedded in department/ schools/ council planning beyond the intervention group	<i>Evaluation form at dissemination events</i>	<i>Monitoring the reach of delegates that attend the network events</i>	<i>Open question</i>		<i>Delegates extended reach to a further 592 teachers and 12,991 students</i>
Teachers/ schools outside the intervention group have the opportunity to increase their subject knowledge through the programme	<i>Evaluation form at dissemination events</i>	<i>Number of teachers</i>	<i>Number of teachers disseminated to at events</i>		<i>77 Delegates having attended dissemination events</i>
Knowledge, and use, of resources available to support financial education increases for Lead Teachers	<i>Evaluation survey</i>	<i>Teacher at network events</i>	<i>Yes/No question</i>		<i>96% of delegates said that their knowledge of resources had increased</i>

8.3.1 Please provide information on (*minimum 500 words*):

The wider system group can be defined as those teachers who have attended one of the dissemination events organised as part of the project. This is a total of 77 teachers.

The 77 teachers had all attended a dissemination event to which they had been invited. Invites were made available to all secondary maths teachers within London and the sample of schools was a representative sample. Every attendee completed an evaluation form which was made available at the end of the days training.

The training session they attended consisted of a total of 5 hours of input from our consultants and Lead Teachers. Delegates were provided with:

- an overview of the project and the outcomes to date
- a look at the new mathematics curriculum and the importance of financial mathematics in relation to GCSE assessment
- a review of past GCSE papers, exploring the challenges that some of the financial context questions face for students

- opportunities to explore resources and activities to support the development of a greater financial context delivery of mathematics
- provided with our own 'Introducing Financial Mathematics' and 'Maths Matters' resources for use back in their own schools.

The evaluations from these delegates were extremely positive. It can often be very difficult to get teachers out of the classroom to attend such events, so to have a total of 77 attending was very pleasing. Of these 96% felt that the sessions had increased their knowledge

8.4 Impact Timelines

Please provide information on impact timelines:

- At what point during/after teacher CPD activity did you expect to see impact on teachers? Did this happen as expected?
- At what point during/after teacher CPD activity did you expect to see impact on pupils? Did this happen as expected?
- At what point did you expect to see wider school outcomes? Did this happen as expected?
- Reflect on any continuing impact anticipated.

The Lead Teachers model provided progressive support to teachers. This would begin with a one day introductory workshop to outline the project, the intentions and outcomes. This also considered the pedagogy involved and our own hypothesis for the outcomes of the project. At the end of this day our team of consultants were provided time to make initial contacts with the schools they were to support. This often involved them making future arrangements for an initial 1:1 meeting. The average time from the introductory workshop to the initial meeting was around four weeks.

At the initial 1:1 meetings consultants would establish an action plan with the school, and a timetable of intervention. In the vast majority of cases this comprised of a combination of further 1:1 support and staff CPD. Visits took place at very different frequencies depending on the different Lead Teachers, but on average visits would occur at least once a month.

Following the initial 1:1 meeting teachers would begin delivering to students within two months. This delivery would include the embedding of the pre and post assessment, so would also be the starting point for measuring impact.

In terms of wider school outcomes these tended to happen once the Lead Teacher in the school had taken one of their groups through a whole cycle of pre assessment, delivery and post assessment. The positive impact on maths attainment was a key driver for this. On average the wider school outcomes would begin around six months following the initial 1:1. This took the shape of the Lead Teacher sharing with the rest of the maths department.

Approximately one year from the beginning of the project, and around nine months from the first 1:1 initial meetings we held a dissemination event in central London and invited maths teachers to attend to find out more about the project and the outcomes we had been observing. This enabled the project to be shared far more widely to schools that had not been involved in the project.

Finally towards the end of June 2015 we published a free legacy resource of the London Lead Teacher project entitled Maths Matters. This showcased some of the good practise from the project as well as providing activities which set areas of the maths curriculum in a particular financial context and opportunities for assessment to measure impact. This is available on our website for all teachers to download. We anticipate that this will continue to extend the reach and impact of the London Lead Teachers project over the next few years.

9. Reflection on overall project impact (maximum 1,500 words)

The London Lead Teacher in Financial Mathematics project began as an exploratory project to investigate whether providing a real and relevant context to mathematics could enhance student attainment as well as developing the knowledge and confidence in both teachers and students in financial matters. We believed in our hypothesis which was outlined within the Theory of Change, but could not find any specific evidence of any previous testing of this hypothesis. We initially looked for research to identify any other studies into the delivery of mathematics in a greater financial context. This desk based research found no evidence of any previous work in this area, although we were able to identify a number of papers which made the connection between the provision of greater real and relevant problems solving opportunities with an increase in attainment and engagement:

The Ofsted report 'Mathematics: Made to Measure'

(<http://www.slideshare.net/Ofstednews/mathematics-madetomeasure>) highlights that too much secondary school mathematics teaching is focused purely on 'the test', and not on more rounded contextual problem solving. The report also acknowledges that many teachers continue to struggle to develop the skills of using and applying mathematics systematically.

The Vorderman report 'A World Class Mathematics Education for all Young People'

(<http://www.tsmresources.com/pdf/VordermanMathsReport.pdf>) made reference to the importance of financial numeracy and that this should be included within the mathematics curriculum. Indeed, within the new key stage 3 and 4 National Curriculum, 2014, we see this recommendation has been implemented and references to financial mathematics are made throughout areas of the curriculum. This emphasises the importance of financial mathematics, although there is a general unawareness amongst maths teachers of the extent to which personal finance can be used as a context for delivering different areas of the curriculum and how it can improve their students engagement and attainment.

Using the information gathered through our desk based research and the analysis we had performed on the past GCSE papers and examiner comments it was felt that by developing teacher's knowledge and confidence in delivering maths in a greater financial context this could have a significant impact on the mathematical attainment of learners when answering questions using a financial context. It was for this reason that we sought to test the hypothesis through the London Lead Teachers project.

Over the 18 months of delivery in schools of this project we have observed teachers who have developed not only knowledge, skills and confidence in delivering mathematics within a financial context, but have been able to explore different pedagogical methods of teaching and learning, allowing students to approach financial context questions, and the level of reasoning and problem solving required, in a more open and independent way. The investment of consultant time is key to driving this change so that teachers felt supported in developing such a new way of delivering.

This type of intervention very much supports two of the overall aims of the LSEF:

1. Cultivate teaching excellence through investment in teaching and teachers so that attention is re-focused on knowledge-led teaching and curriculum.
2. Support self-sustaining school-to-school and peer-led activity, plus the creation of new resources and support for teachers, to raise achievement in priority subjects in primary and secondary schools (English, mathematics, biology, chemistry, computer science, physics, history, geography, languages).

We have been able to support schools, and allow teachers time to develop their confidence to approach learning differently whilst remaining focused on knowledge-led teaching and the

curriculum. To be able to showcase a significant improvement in attainment was of substantial benefit in incentivising teachers to take this on and begin to develop this further.

Our philosophy as a charity is to support teachers to be able to support themselves and this project embodied that philosophy, with Lead Teachers taking ownership for delivery mathematics using a greater financial context and then sharing this with colleagues within their own school and far beyond.

We very much see this project as being a secondary stretch project, enabling teachers to re-evaluate the way in which they deliver certain aspects of their mathematics curriculum. The benefits of this observed throughout the project are an increase in students attainment as well as development of knowledge, skills and attitudes within financial education.

The London Schools Excellence Fund (LSEF) is based on the hypothesis that investing in teaching, subject knowledge and subject-specific teaching methods and pedagogy will lead to improved outcomes for pupils in terms of attainment, subject participation and aspiration.

The aims of the Fund:

- I. Cultivate teaching excellence through investment in teaching and teachers so that attention is re-focused on knowledge-led teaching and curriculum.*
- II. Support self-sustaining school-to-school and peer-led activity, plus the creation of new resources and support for teachers, to raise achievement in priority subjects in primary and secondary schools (English, mathematics, biology, chemistry, computer science, physics, history, geography, languages).*
- III. Support the development of activity which has already been tested and has some evaluation (either internal or external), where further support is needed to develop the activity, take it to scale and undertake additional evaluation.*
- IV. In the longer term, create cultural change and raise expectations in the London school system, so that London is acknowledged as a centre of teaching excellence and its state schools are among the best in the world.*

10. Value for Money

10.1 Apportionment of the costs across the activity

Please provide an estimate of the percentage of project activity and budget that was allocated to each of the broad activity areas below. Please include the time and costs associated with planning and evaluating those activity areas in your estimates.

Broad type of activity	Estimated % project activity	£ Estimated cost, including in kind
Producing/Disseminating Materials/Resources	10%	£14,041.23
Teacher CPD (face to face/online etc)	10%	£14,041.23
Events/Networks for Teachers	10%	£14,041.23
Teacher 1:1 support	70%	£98,288.63
Events/Networks for Pupils	0%	
Others as Required – Please detail in full		
TOTAL	100%	£ 140,412.32

Please provide some commentary reflecting on the balance of activity and costs incurred: Would more or less of some aspects have been better?

The balance of cost was always going to be geared heavily towards ‘Teacher 1:1 support’ as this follows the sustainable approach to integrating financial education which we have significant experience of as a charity. All of the activities above contribute to on-going sustainability, but to work directly with a teacher to embed this within their curriculum ensures that the content will be delivered to each and every cohort of young people in forthcoming years.

The development of a legacy resource, and the holding of the dissemination events extended the reach of the project, but beyond the schools in which we provided teacher 1:1 support it is difficult to determine the level of engagement and integration. This being the case it is appropriate the vast majority of cost went into supporting teacher 1:1 support.

10.2 Commentary of value for money

The costs for the project which had a direct impact on the Lead Teachers were the teacher CPD and the 1:1 support. The total cost of these is £112,329.86. This breaks down to a cost of:

- £4,320.38 per Lead Teacher (26)
- £50.24 per student directly involved (2,236)
- £135.83 per teacher disseminated to (827)
- £5.38 per students disseminated to (20,895)

Pfeg currently runs a programme entitled Centre of Excellence, which provides consultancy support to develop financial education provision within a school. This is an evaluation based accreditation programme and consists of up to 10 days consultancy time in the school to embed financial education into at least two subject areas. The schools is expected to include financial education in the improvement plan, involve student voice in the development of provision, develop active and applied learning opportunities, establish monitoring and evaluation procedures and share their knowledge with other schools. The

full cost of this is £18,000. The London Lead Teacher project cost per Lead Teacher (and therefore per school) is less than a quarter of this. Being focused wholly on mathematics there is less content and less consultancy time per school, but even so the cost of £4,320.38 per school appears to be good value, particularly if the school then goes on to disseminate to further teachers.

11. Reflection on project delivery

:

11.1 Key Enablers and Barriers to Achievement

There were certain enablers that were key to the project success:

- Engaging with experience members of staff with influence within the school
We knew from the outset of the project that we needed to be able to engage with senior members of the mathematics department in order that they had the required influence to be able to disseminate the project further within their department and also communicate the project effectively to senior management. In most cases we were successful in achieving this, however there were two examples of where we worked with less influential staff and in one of these cases the project only extended to a small group of students due to the lack of influence within the department.
- Providing 1:1 consultancy support to teachers is of significant value. Teachers appreciate having someone who they can collaboratively work with to design something that is bespoke to the needs of their school and their students. CPD and training can be very effective, but it can be extremely difficult to tailor this to the needs of one school.

The main barrier to the project was the time required on the teachers behalf. We did offer a support fund to cover the financial costs of this, however this was very rarely taken up. The conclusion of this is that is not the financial restraint, just the physical capacity which is the barrier. Teachers are often working to capacity and unless there is a very good reason to invest time in engaging in new initiatives it will not happen. Seemingly, investing time to improve students ability is one of those good reasons.

11.2 Management and Delivery Processes

The management and delivery processes established at the beginning of the project changed little throughout and achieved the outcomes they were designed to.

We used our own internal relations with schools, as well as linking with other mathematics networks such as the NCETM to recruit schools onto the project.

11.3 Future Sustainability and Forward Planning

We now plan to secure funding to roll the Lead Teachers in Financial Mathematics into a national programme beyond London. This will aim to test our hypothesis that 'mathematical attainment can be increased by teaching maths in a greater financial context' outside of London. The London Lead Teachers project will continue to be disseminated through the legacy resource, but we need to apply this learning in other areas of the country and establish a sharing network that broadens the outcomes of the project.

It will be important that the assessments we have designed are able to be utilised again for this extension. We will hopefully follow a very similar model of 1:1 consultancy support and CPD provision, alongside opportunities for the Lead Teachers to share and disseminate their impact to far greater number of teachers. Our aim is to create a further 75 Lead Teachers throughout England, with the potential to reach 2,500 teachers and in excess of 60,000 students.

12. Final Report Conclusion

Please provide key conclusions regarding your findings and any lessons learnt (*maximum 1,500 words*).

Alongside overarching key conclusions, headings for this section should include:

Key findings for assessment of project impact

The overwhelming outcome from this project is the suggestion that delivering maths within a greater financial context can significantly improve attainment. This can be seen in the difference of 18.39% achieved by the test group compared to the control group in the post assessments.

We know that teachers found involvement in the project to have improved their knowledge and confidence in delivering financial context mathematics, and an unexpected outcome was that through their development of this they began to be more open in their maths teaching, allowing students to explore reasoning and problem solving skills independently. Providing a financial context for the mathematics being delivered enabled the teachers to remove some of the 'scaffolding' from the problems they would normally set the students as the students could very easily see the relevance of the questions.

The majority of Lead Teachers have gone on to continue the development of financial context mathematics further within their school. This has ranged from extending the number of lessons or activities to embedding financial context mathematics in different year groups.

Although one of the key aims of the project and the theory of change was to also develop students knowledge, skills and attitudes towards money and finance it has not been possible to capture this in any quantitative way. There has been plenty of qualitative evidence that this is the case, and indeed, through the focus groups the Lead Teachers expressed that this has certainly been an outcome of the project, but it has proven very difficult to actually measure an increase in financial capability.

Key lessons learnt for assessment of project delivery

Bringing together the Lead Teachers at the very beginning of the project worked extremely well. They were able to find out more about the project together, discuss the practicalities and possibilities and begin action planning together. This also allowed our consultants to begin working with the Lead Teachers they were supporting at the earliest opportunity.

The biggest challenge throughout the project was competing for teachers time. This is a very precious resource and some schools were better than other at providing this time. As the project developed it became a little easier as the initial results showing an impact of attainment could be used to support the investment of time.

The key unintended outcome of the project was the development of pedagogy amongst the Lead Teachers. We had not fully appreciated that to deliver mathematics in a greater financial context enabled teachers to remove some of the scaffolding of traditional maths problems and reasoning. As students now found the context real they required less direction and began working more independently. Teachers found this freedom within maths empowering.

Informing future delivery

The model used within this project has been successful and it is one that we would employ again if funding is successful to scale up.

The evaluation is certainly something that could be developed further, and to employ additional resource and support for this would be something we would look to develop when scaling up. Ideally we would want to conduct a more rigorous academic evaluation of the project.

Recommendations

Based on the findings within this project we would make a number of key recommendations in relation to repeating this with other schools:

- A full day training for the Lead Teacher is a key to gaining their 'buy-in' to the project.
- Providing examples of activities and resources which can be used to support the delivery of mathematics in a greater financial context is important in modelling how Lead Teachers will go about embedding this into their regular teaching practise.
- Allowing Lead Teachers to trial this with one group of students before disseminating more widely to other teachers within the department allowed them to develop a level of confidence which was then imparted to their colleagues. This is really important in gaining the trust of those colleagues.
- The most effective interventions occurred when at least five lessons or activities were completed, and when these were integrated into a programme of study.
- All of the Lead Teachers valued the support of the consultants that supported them. In essence this relationship was similar to a mentoring role, and the Lead Teacher work collaboratively with the consultants to plan deliver and reflect. It is through building these positive 1-1 relationships that ensured the commitment of the Lead Teachers.

Appendix 1

LSEF – Lead Teacher Pre Questionnaire

1. How would you rate your current knowledge of financial education within the 2014 mathematics curriculum?

Very poor										Very good
1	2	3	4	5	6	7	8	9	10	

2. How would you rate your current knowledge of financial education in general?

Very poor										Very good
1	2	3	4	5	6	7	8	9	10	

3. How would you rate your current confidence in delivering appropriate financial education in general?

Very poor										Very good
1	2	3	4	5	6	7	8	9	10	

4. Which of the following best describes how often you use a financial context in your lessons?

Never	<input type="checkbox"/>
Rarely	<input type="checkbox"/>
Sometimes	<input type="checkbox"/>
Mostly	<input type="checkbox"/>
Always	<input type="checkbox"/>

5. To what extent would you say that personal finance is embedded within your current mathematics curriculum?

Not embedded at all	<input type="checkbox"/>
At the beginning stage of embedding	<input type="checkbox"/>
Embedded into certain year groups	<input type="checkbox"/>
Completely embedded	<input type="checkbox"/>

6. Do you currently use any specific resources to deliver a financial context within mathematics?

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

If yes please state which here:

7. Do you attend any external maths related networks or meetings?

Yes
No

If yes please state which here:

LSEF – Lead Teacher Post Questionnaire

1. How would you rate your current knowledge of financial education within the 2014 mathematics curriculum?

Very poor										Very good
1	2	3	4	5	6	7	8	9	10	

2. How would you rate your current knowledge of financial education in general?

Very poor										Very good
1	2	3	4	5	6	7	8	9	10	

3. How would you rate your current confidence in delivering appropriate financial education in general?

Very poor										Very good
1	2	3	4	5	6	7	8	9	10	

4. Which of the following best describes how often you use a financial context in your lessons?

Never

Rarely

Sometimes

Mostly

Always

5. To what extent would you say that personal finance is embedded within your current mathematics curriculum?

Not embedded at all

At the beginning stage of embedding

Embedded into certain year groups

Completely embedded

6. Have you observed an improvement in student attainment as a result of delivering mathematics in a financial context

Yes

No

Unsure

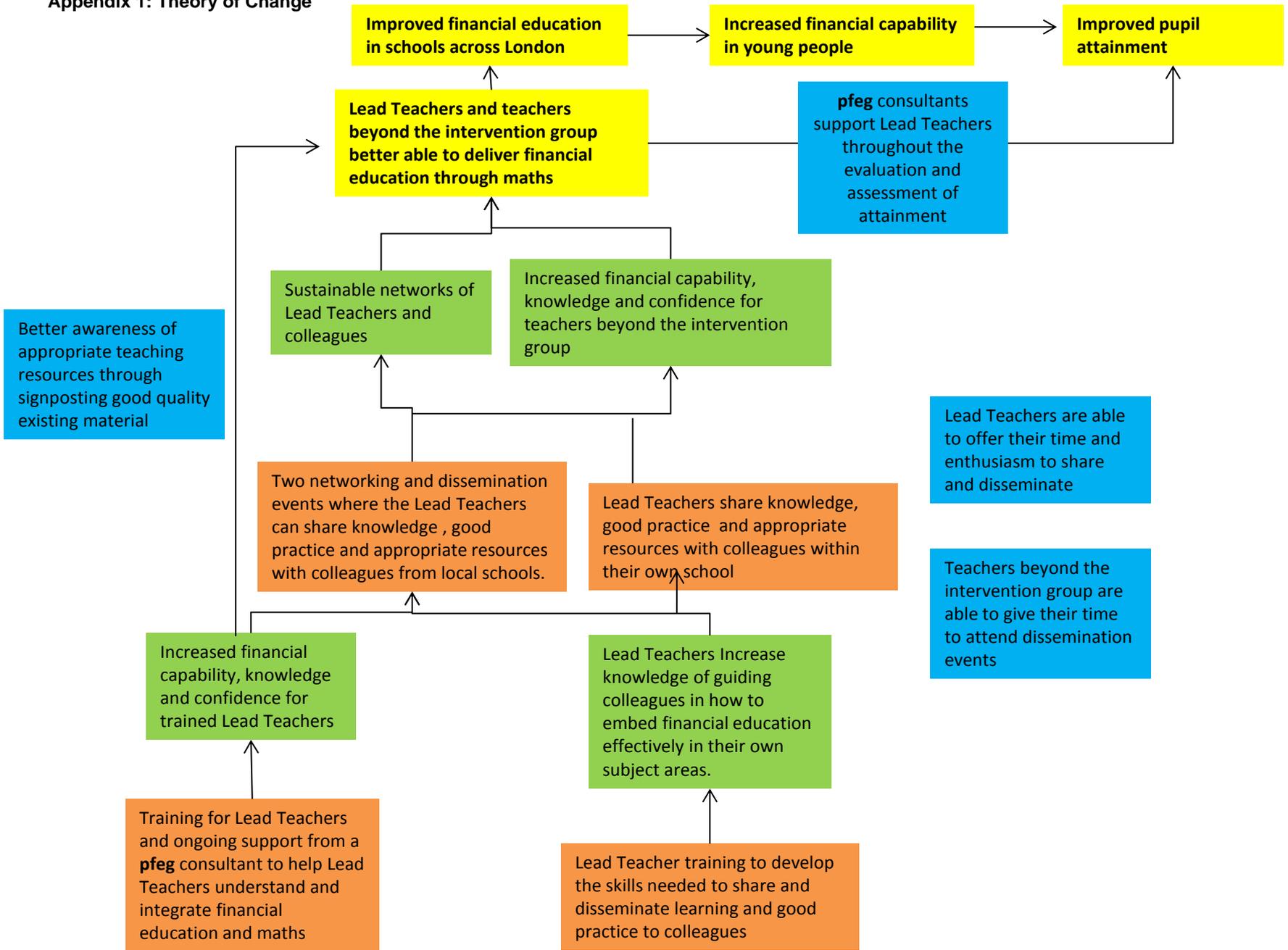
7. Have you observed an improvement in student engagement as a result of delivering mathematics in a financial context?

Yes
No
Unsure

8. Have you shared any of the work you have done in school with colleagues?

Yes
No

Appendix 1: Theory of Change



LSEF 058 – London Lead Teachers Evaluation Framework

<u>Outputs</u>	<u>Indicators of Outputs</u>	<u>Baseline data collection</u>	<u>Impact data collection</u>
<ul style="list-style-type: none"> 12 Schools supported to develop Lead Teachers 	12 lead teachers trained Names and school details collected		Teacher outcomes reported on
<ul style="list-style-type: none"> 42 colleagues supported by Lead Teachers (in their own school) 	Lead teachers support colleagues Names and school details collected		Teacher outcomes reported on
<ul style="list-style-type: none"> 48 colleagues from neighbouring schools supported 	Further supported colleagues Names and school details collected		Teacher outcomes reported on
<ul style="list-style-type: none"> Total 102 teachers access some form of support from the project 	Total supported teachers Names and school details collected		Teacher outcomes reported on
<ul style="list-style-type: none"> 12240 pupils access improved financial education during the project (102 teachers x 120 pupils) 	Pupils accessing improved financial education through trained teachers Class sizes and year groups collected		Teachers report on the teacher outcomes and impacted pupils
<ul style="list-style-type: none"> 2 Conference/workshops delivered 	Conferences arranged Programmes and attendance register		Conference evaluation forms collected Focus groups
Teacher Outcomes	<u>Indicators of Outcomes</u>	Baseline data collection	Impact data collection
<ul style="list-style-type: none"> Increased subject knowledge and greater awareness of subject specific teaching methods 	All 12 lead teachers report an increase in knowledge of financial education and teaching methods using self-designed questionnaires specific to this project – they will include both scale scoring and open feedback.	Individual teacher questionnaire pre training intervention in February 2014. Completed by all Lead Teachers via an online expression of interest survey. Focus groups pre training in March 2014. Conducted with a sample of 4 Lead Teachers, representing a third of all the Lead Teachers.	Individual teacher questionnaire post training intervention in November 2014. Completed by all Lead Teachers. Focus groups post training in November 2014. Conducted with a sample of 4 Lead Teachers, representing a third of all the Lead Teachers.

<ul style="list-style-type: none"> • Increased teacher confidence 	<p>All 12 lead teachers report an increase in confidence within their own subjects using self-designed questionnaires specific to this project – they will include both scale scoring and open feedback.</p>	<p>Individual teacher questionnaires pre training intervention in February 2014. Completed by all Lead Teachers via an online expression of interest survey.</p> <p>Focus groups pre training in March 2014. Conducted with a sample of 4 Lead Teachers, representing a third of all the Lead Teachers.</p>	<p>Individual teacher questionnaires post training intervention in November 2014 Completed by all Lead Teachers..</p> <p>Focus groups post training in November 2014. Conducted with a sample of 4 Lead Teachers, representing a third of all the Lead Teachers.</p>
<ul style="list-style-type: none"> • Delivery of higher quality teaching including subject-focused and teaching methods 	<p>Higher quality classroom teaching reported by at least 9 Lead Teachers (75%)</p>	<p>Self-reported quality of classroom teaching collected using pre training questionnaires in February 2014. All London Lead Teachers will have completed the questionnaire. These questionnaires have been designed by pfeg specifically for the London Lead Teacher project</p>	<p>Self-reported quality of classroom teaching, collected using post training questionnaires in November 2014. . All London Lead Teachers will have completed the questionnaire.</p>
<ul style="list-style-type: none"> • Use of better subject-specific resources 	<p>Increase in the uptake of financial education resources available</p>	<p>Audit of financial education resources currently in use in March 2014. This audit will be conducted collaboratively between the London Lead Teacher and pfeg consultant.</p> <p>Focus groups pre training in March 2014. Conducted with a sample of 4 Lead Teachers, representing a third of all the Lead Teachers.</p>	<p>Use of new resources measured by conducting a renewed resources audit at the end of the intervention and highlighting an difference in usage.</p> <p>Planning documentation will be collected by the pfeg consultant in collaboration with the Lead Teacher to highlight use of new resources. These could be in the form of lesson plans or schemes of work. Examples will be collected from all Lead Teachers, having been scrutinised by the pfeg consultants, and prior to November 2014.</p>

			Focus groups post training in November 2014 will also identify any new resources used by the Lead Teacher. Conducted with a sample of 4 Lead Teachers, representing a third of all the Lead Teachers.
Pupil Outcomes	Indicators of Outcomes	Baseline data collection	Impact data collection
<ul style="list-style-type: none"> Increased educational attainment and progress 	<p>10% of teachers supported would report a potentially large impact on attainment</p> <p>30% would report a potentially moderate impact on attainment</p> <p>30% would report the potential for some impact on attainment</p> <p>The measure of student's attainment will be recorded by measurement against UK Baseline GCSE data. This data is accessible through the 'Results +' software.</p> <p>Questions from the 2012 and 2013 Edexcel Mathematics papers have been analysed to extract questions containing a financial context. The UK average marks for each question, along with the examiners comments have also been extracted.</p> <p>When delivering any financial topics within maths the Lead Teachers will use any appropriate past paper questions to assess the progress of their students. For each question used the performance of the Lead Teacher's students can then be</p>	<p>Questions from the 2012 and 2013 Edexcel Mathematics papers have been analysed to extract questions containing a financial context. The UK average marks for each question, along with the examiners comments have also been extracted. This provides UK wide baseline data for specific areas of financial mathematics.</p> <p>The mathematical questions with a financial context have been extracted from the PISA 2009 assessment. These all have individual baseline scores across all of the countries involved in PISA 2009</p>	<p>Use of appropriate past questions which cover the same topics the Lead Teachers have delivered to their students. A comparison can then be made in relation to the performance of the Lead Teacher's students against the UK average for each question.</p> <p>Use of appropriate past questions which cover the same topics the Lead Teachers have delivered to their students. A comparison can then be made in relation to the performance of the Lead Teacher's students against the average for all PISA countries.</p>

	<p>compared against the UK average performance.</p> <p>In addition to this we have also extracted the mathematical questions with a financial context from the PISA 2009 assessment. These all have individual baseline scores across all of the countries involved in PISA 2009. By comparing the Lead Teacher's group performance against these questions we can compare performance with all PISA countries. This would be an extension to the evaluation, possibly not used by all of the Lead Teachers.</p>		
<ul style="list-style-type: none"> Pupils showing greater engagement, enthusiasm and understanding of the academic subject when combined with financial education. 	<p>Greater engagement, enthusiasm and understanding reported by Lead Teachers</p>	<p>Pupil engagement measured by Lead Teachers pre intervention – through focus groups, case studies, and questionnaires in March 2014. All Lead Teachers will complete the questionnaire, and 4 Lead Teachers will be involved in the focus groups, representing a third of the Lead Teachers.</p> <p>The case studies will be produced in conjunction with at least three of the Lead Teachers, representing a quarter of the Lead Teachers. These will aim to highlight the 'distance travelled' by the Lead Teacher's and their students over the course of the project. pfeg consultants will develop the case studies in conjunction with the London Lead Teachers and will</p>	<p>Pupil engagement measured post intervention – self evaluation questionnaires and case studies and focus groups with lead teachers in November 2014. All Lead Teachers will complete the questionnaire, and 4 Lead Teachers will be involved in the focus groups, representing a third of the Lead Teachers.</p> <p>The case studies will be produced in conjunction with at least three of the Lead Teachers, representing a quarter of the Lead Teachers. These will aim to highlight the 'distance travelled' by the Lead Teacher's and their students over the course of the project. pfeg consultants will develop the case studies in conjunction with the London Lead Teachers and will begin building the case studies from April 2014,</p>

		begin building the case studies from April 2014.	concluding in November 2014.
School System / 'Culture Change' Outcomes	Indicators of Outcomes	Baseline data collection	Impact data collection
<ul style="list-style-type: none"> Teachers/ schools involved in intervention making use of the networks, other schools and colleagues to improve subject knowledge and teaching practice 	<p>Network events well attended and represented by lead teachers as measured using attendance register</p> <p>Positive feedback on networking event</p>	Gather information with regard to networks already attended by lead teachers in March 2014. This will be collected through the initial questionnaires, as well as through feedback from the pfeg consultant supporting each London Lead Teacher.	<p>Measuring of attendance figures at both network events.</p> <p>Networking event self-evaluation questionnaires. This looking to measure an improved knowledge, skills and attitude towards financial education, as well as a commitment to deliver within own school settings.</p> <p>Successful running of events planned for June 2014 and November 2014. This is to be measured using an event evaluation form.</p>
<ul style="list-style-type: none"> Programme activities/ model is embedded in department/ schools/ council planning beyond the intervention group <p>Embedding is likely to be specific to the delivery of financial education in Mathematics.</p>	50% of teachers attending the network events will go on to deliver mathematics using a financial context within the lifespan of this project.	Online survey undertaken with registered attendees pre event in May 2014 and October 2014. This will explore the knowledge, skills, and attitudes towards financial education within mathematics, as well as current level of deliver.	<p>Post survey undertaken with all attendees post event. This will explore the 'distance travelled' in knowledge, skills, and attitudes towards financial education within mathematics, as well as current level of deliver, following the intervention of the network event.</p> <p>Focus groups with attendees. We aim to hold focus groups with 12 attendees. Six following the June network event and six following the November event.</p> <p>Phone interviews with attendees. This will be dependent upon permission being provided at each of the events; however we plan to hold phone</p>

			<p>interviews with 12 attendees in total. Six following the June network event and six following the November event.</p> <p>Events planned for June 2014 and November 2014</p>
<ul style="list-style-type: none"> Teachers/ schools outside the intervention group have the opportunity to increase their subject knowledge through the programme 	<p>Attendance and representation at networking events</p> <p>50% of teachers attending the network events will show an increase in their knowledge of mathematics in the context of financial education after the event.</p>	<p>Online survey undertaken with registered attendees pre event in May 2014 and October 2014. This will explore the knowledge, skills, and attitudes towards financial education within mathematics, as well as current level of deliver.</p>	<p>Post survey undertaken with all attendees post event. This will explore the 'distance travelled' in knowledge, skills, and attitudes towards financial education within mathematics, as well as current level of deliver, following the intervention of the network event.</p> <p>Focus groups with attendees. We aim to hold focus groups with 12 attendees. Six following the June network event and six following the November event.</p> <p>Phone interviews with attendees. This will be dependent upon permission being provided at each of the events; however we plan to hold phone interviews with 12 attendees in total. Six following the June network event and six following the November event.</p> <p>Number of attendees</p> <p>Events planned for June 2014 and November 2014</p>
<ul style="list-style-type: none"> Knowledge, and use, of resources available to support financial education 	<p>Wider knowledge of the resources available to support financial education</p>	<p>Audit of financial education resources currently in use in March 2014. This audit will be conducted</p>	<p>Use of new resources measured by conducting a renewed resources audit at the end of the intervention and</p>

<p>increases for Lead Teachers</p>		<p>collaboratively between the London Lead Teacher and pfeg consultant.</p> <p>Focus groups pre training in March 2014. Conducted with a sample of 4 Lead Teachers, representing a third of all the Lead Teachers.</p>	<p>highlighting an difference in usage.</p> <p>Planning documentation will be collected by the pfeg consultant in collaboration with the Lead Teacher to highlight use of new resources. These could be in the form of lesson plans or schemes of work. Examples will be collected from all Lead Teachers, having been scrutinised by the pfeg consultants, and prior to November 2014.</p>
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