



My Money

Mathematics Teacher Handbook

Teaching Personal Finance Education
in Mathematics at key stages 3 and 4



Personal Finance
Education Group





My Money Mathematics Teacher Handbook

Mathematics at key stages 3 and 4

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Section 1: Introduction

Financial capability is an increasingly important skill in our society. Levels of debt and insolvency in the UK are at an all-time high and there is a growing reluctance among young people in particular to save for the future. At the same time, people are faced with a vast array of financial products and services and are required to make complex decisions that will have significant consequences for their future wellbeing.



The aim of this handbook is to help teachers of mathematics build personal finance education into schemes of work with key stage 3 and 4 learners.

A 2008 survey carried out by **pfeg** (the Personal Finance Education Group) found that 97% of 536 secondary teachers thought that teaching personal finance education in schools is important. Providing personal finance education from an early age not only equips pupils with a basic understanding of money, it also helps to address a number of issues that particularly affect young people, such as:

- rising levels of reliance on credit
- managing the cost of further and higher education
- part-time employment
- targeted advertising promoting goods and services
- the increased variety and availability of payment options
- e-commerce.

The aim of this handbook is to give teachers practical help in tackling these imbalances by equipping all pupils with a solid understanding of money and all that is associated with it.

What is financial capability and what is personal finance education?

Financial capability is the ability to manage one's finances and to become a confident, questioning and informed consumer of financial services.

Personal finance education is a planned programme of learning opportunities and experiences designed to increase the financial capability of all pupils from every social and cultural background.

The development of financial capability is lifelong, a continuum. We need to move along this continuum to develop an awareness and understanding of money matters, as well as the skills, critical judgement and resolve to manage them. Personal finance education supports the development of such knowledge and understanding, skills and attitudes.

What is this handbook for?

This handbook is for teachers of mathematics to help them build personal finance education into schemes of work with key stage 3 and 4 learners. It encourages a flexible approach to teaching by incorporating elements of personal finance into mathematics schemes of work. However, an integrated approach is essential for such a programme to be effective and liaison between participating departments (e.g. mathematics, citizenship, and PSHE education) should be encouraged from the outset. **pfeg** takes note of this ethos and embraces a cross-curricular whole-school approach.

The booklet aims to enable teachers to:

- develop pupils' mathematical skills using contexts from personal finance
- deliver functional aspects of mathematics related to financial capability with confidence
- understand terms and concepts related to financial capability
- access suitable resources that will support the achievement of learning outcomes
- help pupils to explore relevant concepts and processes in mathematics more fully and to explore their relationship with financial capability
- understand that an inspiring teaching programme explores mathematical content using contexts drawn from PSHE education and citizenship
- identify where the quantitative aspects of financial capability can be applied within the mathematics curriculum
- adapt existing schemes of work to include opportunities to build pupils' financial capability alongside their mathematical development.

NB

There are also two other My Money Teacher Handbooks available – for PSHE education and for citizenship teachers. These handbooks help schools build personal finance education into schemes of work with key stage 3 and 4 learners.

Visit www.pfeg.org to order and for more information.

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Section 2: Learning outcomes

Learning outcomes

The 2007 National Curriculum programmes of study for mathematics include a section on 'The Importance of Mathematics', which states, 'Mathematical thinking is important for all members of a modern society as a habit of mind for its use in the workplace, business and finance; and for personal decision making'. Thus, financial capability will impinge directly on the teaching of mathematics.

This handbook provides a clear outline of the place of financial capability within the 2007 National Curriculum for mathematics at key stages 3 and 4.



The 2007 National Curriculum states that mathematical thinking is important for all members of a modern society

Curriculum aims and objectives

The 2007 National Curriculum* statutory programmes of study for mathematics specify a number of key concepts and processes that 'underpin the study of mathematics'. In order to develop financial capability, the most relevant of these are:

1. Key concepts

1.1 Competence

1.1a Applying suitable mathematics accurately within the classroom and beyond. (**Applying suitable mathematics:** This requires fluency and confidence in a range of mathematical techniques and processes that can be applied in a widening range of familiar and unfamiliar contexts, including **managing money, assessing risk**, problem solving and decision making.)

1.3 Applications and implications of mathematics

1.3b Understanding that mathematics is used as a tool in a wide range of contexts. (**Mathematics is used as a tool:** This includes using mathematics as a tool for **making decisions in personal life**. Current applications of mathematics in everyday include internet security and managing risk, e.g. **insurance, investments and pensions**.)

1.4 Critical understanding

1.4b Recognising the limitations and scope of a model or representation. (**Limitations and scope:** Mathematics equips pupils with the tools to model and understand the world around them. This enables them to engage with complex issues, such as those involving **financial capability**. For example, mathematical skills are needed to compare **different methods of borrowing and paying back money, but the final decision may include other dimensions, such as comparing the merits of using a credit card that promotes a particular charity with one offering the lowest overall cost.**)

*This resource was reviewed in July 2011, while the National Curriculum, was under review.



The study of mathematics should enable pupils to apply their knowledge, skills and understanding to real-world situations.

2. Key processes

These are the essential skills and processes in mathematics that pupils need to learn to make progress (**Processes in mathematics**: The key processes in this section are clearly related to the different stages of problem solving and the handling data cycle).

2.1 Representing – pupils should be able to:

2.1a identify the mathematical aspects of a situation or problem.

2.1d select mathematical information, methods and tools to use. (**Select mathematical information, methods and tools**: This involves using systematic methods to explore a situation, beginning to identify ways in which it is possible to break a problem down into more manageable tasks, and identifying and using existing mathematical knowledge that might be needed.)

2.2 Analysing – at Key Stage 3, pupils should be able to:

2.2i appreciate that there are number of different techniques that can be used to analyse a problem. (**Different techniques**: For example, working backwards and looking at simpler cases. **Analyse a situation**: This includes using mathematical reasoning and justifying inferences when analysing data.)

3. Range and content

The study of mathematics should enable pupils to apply their knowledge, skills and understanding to relevant real-world situations and should include:

3.1 Number and algebra

3.1b Rules of arithmetic applied to calculations and manipulations with rational numbers. (**Calculations and manipulations with rational numbers**: This includes using mental and written methods to make sense of everyday situations such as temperature, altitude, **financial statements and transactions**.)

3.1c Applications of ratio and proportions. (**Ratio and proportions**: This includes percentages and applying concepts of ratio and proportion to contexts such as **value for money**.)

3.3 Statistics

3.3d Experimental and theoretical probabilities, including those based on equally likely outcomes. (**Probabilities**: This includes applying ideas of probability and risk to **gambling**.)

4. Curriculum opportunities

During these key stages, pupils should be offered the following opportunities that are integral to their learning and enhance their engagement in the concepts, processes and content of the subject.

The curriculum should provide opportunities for pupils to:

4d: work on problems that arise in other subjects and in contexts beyond the school. (**Other subjects**: for example, understanding the number structure and **currency exchange** in modern foreign languages and **managing money in economic wellbeing and financial capability**.)

Contexts beyond the school: for example, conducting a survey into **consumer habits, planning a holiday budget** and measuring for home improvements. Mathematical skills contribute to **financial capability** and other aspects of preparation for adult life.)

NB. The contexts relevant to personal finance that can be used to illustrate the statutory mathematics content in the programme of study are emboldened in the extracts above. These are broad themes that cover a lot of ground and include considerable overlap with financial capability in PSHE education and the citizenship financial capability curriculum. This section is designed to help teachers break down these aims into clearer learning objectives, which can form the basis of classroom activities that use financial context effectively.

NB

For more information on delivering financial capability through PSHE education and citizenship, download or order the My Money PSHE education and Citizenship Teacher Handbooks from www.pfeg.org

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The QCDA specifications can be turned into meaningful classroom experiences.

Classroom opportunities

This section takes the suggested financial topics from the explanatory notes to the programme of study, and shows how the specifications can be turned into meaningful classroom experiences.

Managing money

- Receiving money (where does money come from?)
- Pocket and gift money
- Earning money and part-time employment
- Spending money (what do people spend money on?)
- Budgets and budgeting, needs and wants and the differences between them
- Prioritising spending, comparing financial products
- Independent living
- Debit cards
- Cash-free transactions and ways to pay

Assessing risk

- Gambling
- Insurance, investment
- Pensions
- Risks involved in borrowing money
- E-commerce
- Buying and selling on eBay
- High-risk and low-risk financial transactions

Making decisions in personal life

- The life cycle (financial decisions at various stages of life)
- Choosing a bank account
- Deciding whether to go to university or not
- The cost of a wedding
- The cost of being a parent

Insurance, investment and pensions

- Savings
- Methods of savings and savings accounts
- Types of insurance (including premiums, excess, insurance cover)
- The stock market and stocks and shares
- Individual Savings Accounts (ISAs)
- Types of pension (state, private, company, superannuation)
- Annual Equivalent Rate (AER)

Different methods of borrowing and paying back money

- Credit
- Credit cards
- Store cards
- Personal loans
- Mortgages
- Doorstep lenders ('home credit agents')
- Pawnbrokers
- Annual Percentage Rate (APR)
- Interest
- Overdrafts
- Getting into debt
- Student loans and finance
- Financial exclusion

Financial statements and transactions

- Cash-free transactions and ways to pay
- Bank statements, credit card statements
- Paying bills and invoices
- Automated Teller Machines (ATMs)
- Internet banking
- Payslips and deductions (income tax, national insurance, pension scheme payments, union fees, charitable contributions)

Value for money

- How to reduce the cost of family living
- Choosing the most economical mobile phone tariffs
- The weekly shop and how to shop for bargains
- How to seek out the best independent travel transport costs
- Buying essentials (food, clothing, etc.) and resisting the temptation to buy luxuries
- Making informed choices about spending
- Good and bad consumer habits
- Planning and costing a holiday to get 'the best deal'
- Comparing 'value for money' deals

Gambling

- Types of gambling
- The dangers of gambling
- Investigating probabilities of winning (or losing)

Currency exchange

- Exchange rates
- Different currencies
- Commission charges
- Planning and costing a holiday abroad
- Comparing cost of living in different cultures



Once-relevant process skills – like problem solving – are identified, pupils can apply them to a list of topics.

Process skills and financial capability topics

If the following process skills are identified as being relevant to the use of financial capability in mathematics, pupils can apply them to the following topics:

Process skills	Applicable topics
<ul style="list-style-type: none"> • Problem solving • Identifying mathematical aspects • Methods of exploration • Breaking a problem down into more manageable tasks • Using existing mathematical knowledge • Working backwards and looking at simpler cases • Using mathematical reasoning • Justifying inferences 	<ul style="list-style-type: none"> • Wage and salary calculations: gross pay vs. net pay methods of calculation and why earnings vary. • Allowances and benefits: entitlement; means-tested and non-means-tested benefits. • Different forms of payment, debit/credit arrangement: comparing and using APR. • Holiday currency and conversion rates: other currencies; exchange rates; commission. • Choosing and using a bank account: comparing AER and calculating effect on interest. • Risk: basic financial decisions that contain risk (calculating probabilities). • Personal interest rates: calculation methods; variance according to risk/time. • Financial decisions: personal choice based on knowledge and/or calculation. • Insurance: develop understanding of the principles based on probability. • Paying for local services: council tax; paying for services; calculations from tax bands. • Main forms of taxation: income tax deductions; VAT; National Insurance. • Effects of turbulence in financial markets: boom and bust; credit crunch. • Planning weekly budgets: related to perceived needs and wants.

Topics are summarised from 'Guidance on financial capability in the secondary curriculum: key stage 3 and 4', DCSF (2008)

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Making teaching relevant

One of the factors in using personal finance contexts effectively is to address relevant knowledge, skills and understanding through themes that are meaningful in the lives of pupils. 11–16 year olds are just entering the world of financial independence, moving from pocket money to allowances and part-time work. This is the stage at which young people open their first bank account and begin to make significant purchases for themselves, often with money that they have earned or saved.

Furthermore, there is also a lot of financial capability that will not yet seem relevant to pupils at this stage, such as learning about pensions or mortgages. Part of the challenge of delivering effective personal finance education is to make sure that pupils are aware that these are all life skills that they will need to use eventually, and probably sooner than they expect.

Teachers can exploit this opportunity in mathematics by looking at the list of possible topics below and considering ways in which mathematical skills and understanding can be developed through these themes. A later section in the handbook outlines a number of approaches for teaching these topics and contains a list of suggested resources.

Theme	Topics	Mathematical content
Where does money come from?	<ul style="list-style-type: none"> Working to earn money (including the difference between salary and wage Part-time jobs, commission, piece work, bonuses, overtime) Drawing upon savings, borrowing money Pocket money from parents and other relatives Gifts of money on birthdays and at Christmas Selling personal possessions (eBay, boot fairs, small ads in local newspapers Pawnbrokers as a form of borrowing), 'what did we do before money was invented?' history of money 	<ul style="list-style-type: none"> Calculating income from various sources Working out commission as a percentage Working out bonuses e.g. time and a half Looking at the value of objects that might be sold compared to how much they cost in the first place, i.e. depreciation costs What might be sold and how much it will 'go for' The bartering system: <ul style="list-style-type: none"> equating items of value that might be bartered Putting a value on jobs of work
Where does money go?	<ul style="list-style-type: none"> What we want to spend money on What we have to spend money on Wants and needs, prioritising spending Does it make a difference where it comes from (e.g. if it was a gift rather than earnings, would it make a difference on how we spent it?) Looking at the value of money and its 'spending power', e.g. what could you do with £20, £200, £2,000?' Paying bills and household expenses Utility bills 	<ul style="list-style-type: none"> Shopping exercises Budgeting for the week's expenditure Comparing prices of different brands and calculating savings that could be made Calculating change given Looking at how far a sum of money can be made to go Understanding the numerical information on bills and other financial records Working out the cost of a holiday from the small print in a brochure
What ways are there of paying for things?	<ul style="list-style-type: none"> Cash Debit cards Cheques Standing orders Direct debits Banker's drafts Credit cards Store cards Gift tokens Vouchers Loyalty cards Postal orders Money-off vouchers Tokens Pre-payment certificates Season tickets Phone top-up cards Postage stamps Store 'finance' (i.e. hire purchase) International money orders Three-for-two vouchers Paypal (internet) Loans Mortgages Features of bank accounts 	<ul style="list-style-type: none"> Calculations involving bank statements Comparing the cost of items using cash Debit card Credit card Loan, store finance, etc Comparing APR on different credit and loan deals Calculating total costs with interest Calculating how interest accrues if only the monthly minimum payment is made on credit and store cards Calculating how many times you have to use a season ticket to break even
Financial contexts specific to young people	<ul style="list-style-type: none"> Mobile phone tariffs The cost of an evening out Part-time jobs and payment Pocket money and whether it should be 'earned' (household chores) Whether to spend or save AER, shopping for clothes and shoes Ways of buying music Student finance Budgeting on a student loan Cheap travel Bank accounts for young people E-commerce eBay 	<ul style="list-style-type: none"> Matching mobile phone tariffs to potential customers and working out how much it will cost them per month Looking at the price of a meal on an evening out, cost of leisure activities, e.g. cinema and calculating the cost of an evening out Calculations about savings accounts based on AER Payslips and deductions in part-time jobs Creating a price list for household chores and working out how much could be earned in the evenings and at weekends Pricing up music by looking at prices of CDs and cost of downloads Working out the cost of living for a term at university



A lot of financial capability will not yet seem relevant to pupils at this stage; part of the challenge is to make sure that pupils are aware that these are all life skills they will need to use sooner than they expect.

Theme	Topics	Mathematical content
The cost of independent living	<ul style="list-style-type: none"> • Living alone in a flat: what has to be paid for? • What are the costs of things? • How much do I need to earn in order to live? • How do I budget? • How can I cut my expenditure? • How can I increase my income? • When do I have to start paying council tax? • How much will it be? • How do I get a mortgage for a house? • How do I find a good mortgage? • How incomes and benefits, the cost of being a single parent • How to cut the shopping bill 	<ul style="list-style-type: none"> • Keep a diary of spending for a specified period of time • Calculate total spending and put this in the context of living in rented accommodation; what necessary expenses are there now? Plan a budget to take into account income and expenditure • Make cuts where necessary • Look at council tax bands for various kinds of houses and areas and calculate the council tax bill • Look at council handouts and illustrate council spending using a range of graphic formats • Look at mortgages and work out deposits and monthly repayments
The financial life cycle and planning for the future	<ul style="list-style-type: none"> • Getting money as a gift (e.g. birthday) and what can be done with it • Opening a savings account • Getting a bank account • Taking out a student loan • Getting a debit card • Raising the money for your first car • Getting a credit card • Getting a first job • Financing a year's backpacking, • Paying back the student loan • Starting a pension scheme • Starting up a business • The cost of a wedding • Taking a mortgage to buy a house • Expenditure related to a new baby • Decorating a nursery • Types of insurance policy, e.g. house, health, life • Helping your children when they go to university • Changing your car • Making a will • Taking the holiday of a lifetime • Living on a pension in the light of inflation 	<ul style="list-style-type: none"> • Make a financial life cycle flow chart with estimates of costs at each stage • Use direct.gov or studentcalculator.org to find out how much student loan and maintenance grant pupils are entitled to • Budgeting at university, comparing costs of a loan for a first car • Investigating the cost of a wedding and/or a first child • Decorating a nursery on a budget • Look at a series of scenarios based on insurance policies to see exactly what is and what is not covered and how much money would be payable
Savings, pensions and Investments	<ul style="list-style-type: none"> • Methods of saving (piggy bank vs. savings bank) types of savings accounts • Investigating access to saved money • Credit unions • ISAs • AER • State pensions and National Insurance contributions • Private pensions • Company pensions • Superannuation • Are pensions safe? Will a pension be big enough to exist on? Investment in the stock market • Stocks and shares • Ethical and unethical investment 	<ul style="list-style-type: none"> • Choose items from mail order catalogue and work out how long it will take to save up to buy them given an amount to save each week/month (illustrate with graphs) • Compare AERs for different savings accounts and how much interest will be earned for each • Look at how much tax is deducted from interest and compare with ISAs • National Insurance contribution calculation as part of a general payslip session • Track the progress of share values for different companies over a period of time using FTSE in Financial Times or online
Global Issues	<ul style="list-style-type: none"> • Fair trade • Recognising fair trade goods in the shops • Financially exploited developing countries • The costs of going green • Recycling and the environment • Carbon footprint • Greenhouse gas emissions • Sustainability • globalisation • Third World debt • Economic cycles • Companies and their reputation given global issues, e.g. green issues, child labour, exploitation, etc. • Financial exclusion • Poverty in this country and abroad • Supporting charities, organic food issues 	<ul style="list-style-type: none"> • Work out the cost to an overseas manufacturer of making a pair of jeans and compare it to the cost of one on the high street • Use statistics on green issues to create graphical representations (linear graphs, bar charts, pie charts) • Compare the cost of fair-trade goods with those on non-fair trade • Compare the cost of organic foods with non-organic foods • Prepare possible budgets for families on low income and benefits (see section on sensitivity issues on page 13)

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Section 3: Teaching and learning

Planning and strategy

Factors contributing to good practice in personal financial education

The survey into the teaching of financial capability, completed by Ofsted in 2008 revealed a number of key factors for success displayed by the most effective schools:

- Senior managers demonstrated a strong commitment to personal finance education for all pupils.
- A member of staff, often at a senior level, had responsibility for the development of personal finance education and financial capability across the school or college.
- Dedicated curriculum time was provided, often supplemented by work through other subjects and 'off timetable' days.
- Teachers were confident in their knowledge of personal finance and used contexts that were relevant to pupils.
- Lessons engaged pupils in relevant and meaningful tasks and involved them in discussion and debate.
- Effective use was made of resources, including the expertise of external agencies, such as visits from local bank employees or guidance from **pfeg** consultants through the **pfeg** Advisory Service, by calling **0300 6660 127**.

The role of **pfeg** consultants

pfeg provides free support, resources and expert consultancy to teachers and school leadership teams. **pfeg** consultants have a comprehensive knowledge of the following:

Strategies by which financial issues can be integrated into the curriculum:

- Timetabled lessons, each dealing with a particular subject within personal finance education and focusing on the issues. In the instance of mathematics, a particular theme to be chosen to enable mathematical operations to be used.
- Integrated into subjects across the curriculum – mathematics, citizenship and PSHE education working in conjunction with other subjects to deliver a holistic programme of personal finance. **pfeg** consultants can bring their expertise to the mapping programme and also assist with a financial capability audit within the school.

- As a mathematics induction programme – e.g. some schools have used a short personal financial programme to introduce their pupils to the mathematics programme at the beginning of Year 7 or at the commencement of a GCSE course (very often at the end of Year 9).
- Through enrichment days which could be run by the mathematics department – **pfeg** consultants can help formulate and design materials for such a day.

The best results for delivering personal finance education in school are achieved when learning is reinforced through a careful combination of the above approaches that cover the whole curriculum area, often across several subjects, particularly citizenship and mathematics.

Teaching and learning strategies for incorporating financial capability into mathematics:

pfeg has identified the following teaching strategies as examples of good practice. (NB. This list is not exhaustive but represents a cross-section of approaches.)

- Brainstorming; how can we use mathematics to find solutions to mathematical problems? E.g. using spreadsheets to represent budgeting.
- Collaborative work, E.g. pupils in groups are given pieces of information to solve a financial dilemma and have to work together in order to use all the information.
- Questionnaires, E.g. mobile phone survey on desirable features leading to uses and display of statistical data.
- Discussion – all financial topics benefit from discussion as a means of evaluation and very often this may involve outcomes in the form of mathematical data.
- PowerPoint demonstrations, E.g. looking at a payslip with instructions on screen as to how to calculate tax and National Insurance deductions.
- Use of individual whiteboards – there are resources in the form of interactive software which involve calculations or quizzes with number content.
- Large flash cards, E.g. sums of money spent by the Government on various public services, to be matched against what public services they are spent on.
- Written tests – particularly if a school is using the Free Standing Maths Qualification – Money Management or the IFS 14 – 19 course - Level 1 Award in Personal Finance, Level 2 Certificate in Personal Finance, Level 3 Certificate in Financial Studies, Level 3 Diploma in Financial Studies, Certificate in Personal Finance.



The best results for delivering personal finance education are achieved where learning is reinforced through a combination of curriculum approaches, often across several subjects.

- Role-play, e.g. pupils work in groups to explore the idea of requesting a loan and the implications in terms of repayments.
- Individual activity sheets, e.g. to complete a monthly budget following an introductory whole-class section on budgets.
- Cross-curricular research, e.g. working with geography staff to compare and contrast personal finance in the UK and Ghana within the context of fair trade.

Resources available on the website:

- The resources on the **pfeg** website are vast in number; many are free and downloadable but there are contact details for those which need to be obtained from suppliers.
- **pfeg** consultants have an extensive knowledge of resources available and can save teacher time.
- Pages 14–17 of this handbook point to resources that may be useful materials for the development of financial capability through mathematics. All materials recommended by **pfeg** have the **pfeg** Quality Mark Award (QM) resulting from a process of assessment, which has ensured that the resource is suitable for classroom use, up to date, financially accurate and impartial.

Dealing with sensitive issues

Money and finance are sensitive areas of life that need careful handling within the classroom at all times. An effective way to avoid problematic situations for everyone involved in lessons or with activities dealing with personal finance is to establish ground rules for discussion. Whatever mathematical operations pupils are involved in, they will nonetheless want to talk about the wider context of the issues raised and this should be encouraged. The establishment of clear ground rules will help to minimise embarrassment and avoid inappropriate disclosures and prevent potentially offensive comments.

When developing a set of rules with pupils, it is important to clarify their objectives. The objectives should:

- enable pupils to talk or write about financial matters without the need to make personal disclosures about family circumstances
- encourage constructive discussion, promoting respect for alternative points of view
- promote respect, responsibility and understanding
- help minimise embarrassment and comments of a negative nature.

Ground rules need to be constantly monitored and revised if necessary, and sanctions considered for when they are broken.



An effective way to avoid problematic situations for everyone involved with personal finance is to establish ground rules for discussion.

One way to depersonalise sensitive discussion is to use distancing techniques through scenarios and case studies with fictional characters. Many of the recommended resources for mathematics lessons will be in this format. Wherever possible, ground rules should be based on positive statements, such as a list of dos rather than don'ts. The rules should also be displayed for all to see.

Pupils may need help from the teachers or other pupils in understanding cultural differences in relation to money and the wide range of values that different people hold in terms of personal finance. Explanations of the ways in which different cultures regard and use money can also be an excellent stimulus for discussion and can increase understanding between pupils from varied backgrounds. This can actually become part of the teaching content. For instance, many texts now have sections on Sharia banking and finance. For possible topics and mathematical content of wider cultural differences, see Global Issues on page 11.

Assessment and reflection are also areas that need to be handled with sensitivity. The 2008 DSCF guidance on financial capability makes the following point:

An integral part of teaching, learning and assessment is the opportunity for pupils to reflect with the teacher, with their peers and individually on what they have learned and how it could be applied to real life now and in the future. Because such reflection will inevitably include aspects of pupils' own behaviour, the part that relationships play in their decisions and aspects of family life, sensitivity is needed when planning assessment. Assessment should focus on the achievement of planned learning objectives and never judge the worth or value of an individual pupil or their family.

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Activities and opportunities

Successful mathematics activities that focus on financial capability should be relevant, well planned, informed by an evaluation of pupils' own experience and founded on an awareness of cultural and economic diversity. High-quality activities can be taken from those outlined in the **teaching and learning strategies for personal finance education** on page 12 and those recommended by the **pfeg** website.

This does not preclude the school from using its own ideas and resources generated within the mathematics department. Personal finance education activities will need to be developed to suit different learning styles, different organisational structures, particular social and ethnic backgrounds and to cater for the huge range of pupil abilities.

This section contains simple ideas for a wide range of activities which can easily be adapted to match the needs of a school or group of pupils. The emphasis is on activities promoting collaboration, problem-solving, creativity, interaction, cross-curricular dimensions and of course mathematical skills, which will underpin all the other factors.

NB. The following suggested resources and case studies can be found on the **pfeg** website. Please refer to www.pfeg.org for the full range of resources.

NB

For more structured activities and full lesson plans within financial contexts, check out the My Money Mathematics Resources, available from www.pfeg.org. The resources are led by growth of understanding rather than key stage. Each unit will begin with an accessible and structured activity linking into more open-ended and flexible tasks. The resources encourage a variety of approaches for extending the activities including group work, role-play, games and ICT.



Collaborative mathematics work can add extra motivation to activities, especially if it is done on a competitive basis.

Quizzes are a useful format, particularly if these are based on established TV show formats such as Who Wants to be Millionaire? Multiple choice questions, small prizes, the use of ICT (E.g. questions presented on an interactive whiteboard) and a fast pace can all raise levels of motivation and interest. This can be a good way to 'kick start' a planned programme of a personal finance education unit in mathematics.

* Starting points

- There are case studies on the **pfeg** website which contain quizzes for use in the classroom
- 'Money Skills' (Barclays Bank) has a quiz called 'Who wants to be a Squillionaire?'
- Teachers may wish to devise their own quizzes that mental arithmetic problems concerning money contain, E.g. calculating change, addition of sums of money, simple percentages (such as calculating the amount of money deducted as a percentage of a direct debit payment).
- Other resources on the **pfeg** website will have information on which teachers can base quiz questions.

The quizzes are suitable for Key Stage 3, but may be used with Key Stage 4 groups.



Successful activities should be relevant, well planned, informed by an evaluation of pupils' own experience and founded on an awareness of cultural and economic diversity.

Budgeting case studies can be very useful learning tools, particularly if they are made interactive. This might be on a governmental level, where pupils are required to calculate how they would spend public funds on a number of departments. For this activity, pupils could role-play the departments and bid for money giving the reasons why they think they should get it. A second group of pupils could make the allocations. Pupils could also display allocations as bar charts and pie charts. On a more personal level, budgeting within the home could be studied (i.e. what are our household expenses and how much do we need a month to live?) Budgeting on a student loan would be ideal for Sixth Form pupils.

Starting points

- There are a number of case studies on the **pfeg** website which cover lifestyles, budgeting and credit within different contexts.
- 'Uniaid Interactive' – a full pack of resources for tools and techniques in student finance. Associated with a website called 'student calculator'.
- 'Make Money Make Sense' (Citizens Advice Bureau) contains a presentation and pupil quiz on budgeting.
- 'Money Sense' (NatWest/RBS) has a budgeting exercise in the section 'Balancing Act'.

With the exception of Uniaid (a Year 12 resource, although it could be used with Year 11), all materials are suitable for KS3 and KS4

Pupils can spend time researching how much money Britain spends on public services in comparison with other countries (as a percentage of Gross Domestic Product). Groups can be given different areas to study, e.g. education, health or defence, and can report back to the class. Graphs and comparison charts can be made, which can form the basis for discussion about why some countries prioritise certain services. See also the budgeting activities for another example of looking at public spending.

Starting points

- 'Paying for it' is an online resource produced by the Citizenship Foundation. There are nine lesson plans focused on Government and public spending. Other issues covered are: Crime, Health, Transport, Education and Employment.

Collaborative work can add extra motivation to mathematics activities, especially if it is done on a competitive basis. Pupils can work on the 'Paper Bag' game in groups: in this exercise, they simulate being a poor family living in a shanty town on the outskirts of Calcutta. They have to work out their budget in rupees to keep the family alive for a week; they then make paper bags from scrap paper for ten minutes to sell to local shopkeepers. They calculate how many paper bags they could make in a week and are told they get one rupee for every ten paper bags – so they can calculate whether they have made enough money to meet their budget.

Enterprise activities are also engaging and teach pupils a lot about finance. In MoneySense's 'We're in Business', pupils work in small groups to run a coffee shop, including all the financial aspects of the business. They can give a 'pitch' at the end of the session to see which groups are successful in obtaining money to start up the business.

Activities in which pupils work in groups to solve problems based on personal finance and mathematics are stimulating and fun. Joe's dilemma from MoneySense's 'Bank on It' can be run like this, by giving the essential information on separate cards to the pupils in a group; they have to negotiate with each other in order to help Joe solve his dilemma.



Enterprise activities engage both pupils and teachers about finance

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Mathematics at key stages 3 and 4

* Starting points

- 'MoneySense' (NatWest/RBS) – We're in Business: an enterprise activity involving groups in competition to tender for a business opportunity.
- 'MoneySense' (NatWest/RBS) – Bank on It: contains Joe's Dilemma which can be run as a collaborative group activity.

The suitability is flexible, but The Paper Bag Game is aimed at Key Stage 3 while the MoneySense activities are designed for Key Stage 4 pupils.

There are a number of personal finance education web-based games and interactive materials that can be introduced using an interactive whiteboard before giving pupils a chance to work on them in pairs at workstations. The best of these provide relevant contexts for pupils to learn about money management; they provide problem-solving activities involving budgeting, using figures and considering options, then finding out the consequences. Such online activities are a good way of reinforcing learning for pupils who enjoy working with computers, and they provide instant feedback, providing pupils with opportunities to experiment with different financial scenarios through simulation, which they will eventually meet for real.

* Starting points

- 'Money Talks' (CAB) – this is an excellent resource and contains an interactive board game that can put pupils in competition with each other.
- 'Tax Matters' (HMRC) has a number of online games based around tax and National Insurance.
- There are a number of online games for pupils that concentrate on the stock market, e.g. Stock Market Challenge (10 Lane Learning).

Question-and-answer sessions can give opportunities for pupils to find out how various real people manage their finances. To ensure that suitable volunteers are used, advice can be sought from **pfeg** who will be able to recommend people. Alternatively, schools can arrange visits from people with financial expertise, such as bank managers, entrepreneurs or Citizens Advice Bureau advisers, who will be able to provide a broader picture.

* Starting points

- **pfeg** also runs a scheme called Use Your Expertise whereby trained and CRB-checked volunteers from the financial sector are matched with schools to provide advice, knowledge and expertise on financial capability. For more details visit www.pfeg.org/uyeforschools.

NB. There are, of course, pitfalls to using external contributors, and guidance on the matter is covered in the 2008 DCSF booklet **Guidance on financial capability in the secondary curriculum: key stage 3 and 4**. Advice about receiving help can also be sought from **pfeg** via www.pfeg.org or **020 7330 9470**.



There are a number of web-based games and interactive materials that can be introduced using an interactive whiteboard before giving pupils a chance to work on them in pairs at workstations.



Online activities are a good way of reinforcing learning, as they provide pupils with opportunities to experiment with different financial scenarios.

Themed group challenges run with the help of outside agencies like **pfeg** can provide a rich initial stimulus which can then be built upon using activity sheets, written tasks and mathematical calculations. These types of activities can be adapted to cover areas of personal finance education that research has revealed to be poorly resourced: mobile phones, frauds and e-commerce. In Key Stage 4, group challenges might be based around themes that relate to adult life such as Government schemes and benefits and tax credits

Starting points

- For prepayment certificates and other forms of payment, see 'Colossal Cards' (BEAM Education – a set of giant cards representing forms of payment, and a user guide book).
- For fraud, see Module 8 of 'Your Money and Your Life' (Debtcred) which covers in detail scams, fraud and identity theft. There are teacher notes, pupil activities and an animated video.

Other resources that offer particular opportunities for mathematics are:

- Money Management (Axis Education) – this resource consists of eight modules – Running a Home, Credit and Loans, Banking, Smart Consumer, Planning for the Future, Dealing with Debt, Taxation and Wages and Post-16 options. The cost of each book includes a photocopying licence, so only one copy of each is needed. Besides being a comprehensive resource for a financial capability course, all books contain plenty of mathematical calculations focused on financial capability
- Economic Citizenship (Institute for Citizenship) – activities, all relevant to mathematical operations, include Government spending, recession and growth, how competition affects prices, business plans, advertising and marketing in the music industry (great possibilities for mathematics here), the cost of competition (jeans manufacturing contract), buying a car, and credit scoring.

- Nationwide Education – Savings and Lifeskills (online resource), containing games, factsheets, worksheets and glossary on such subjects as budgeting, saving and borrowing, Money Maths (percentages), Insurance, Money Maths (compound interest), Exchange Rates, forms of payment, etc.
- Talk Money, Talk Maths (Scottish and Northern Ireland versions available, online resource) – there are a series of PowerPoint demonstrations on topics like Talk Phones, Talk Maths; Talk school visits, Talk Maths; Talk Banks, Talk Maths; and Talk Computers, Talk Maths. There are also Word file teacher packs to support these activities, a teachers' book and two Excel spreadsheet files for pupils.
- Pounds and Pence (Bank of England) – this has particularly good sections on the history of money and the Barter Economy with some very useful and engaging activities.
- www.doughuk.com is an online resource covering banking, borrowing, saving, budgeting, benefits, pensions, etc. Pupils can work on this at their own pace.

www.bbc.co.uk/raw/money and www.bbc.co.uk/learningzone/clips/ both contain useful financial and mathematical content for teachers.

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Adapting activities to meet the needs of different pupils

Many of the resources recommended on the **pfeg** website give guidance on how materials can be adapted to suit pupils of differing abilities. Strategies may include any or all of the following:

- Very often, the problems that pupils with severe learning and medium-learning difficulties have are as a result of the reading level of the materials. There are a number of ways of tackling this:
 - Using designated classroom assistants to support and assist individual pupils with the materials.
 - Adapting the material to a more visual style, allowing pupils to work collaboratively in mixed-ability groups so that peer group learning can take place.
 - Turning the material on the printed page into a much more user-friendly oral style by paraphrasing the material.
- For pupils with learning difficulties, use key-word posters on the walls of the classroom. These would be words relating to the topics being dealt with. Simple mathematical terms and operations can be similarly displayed.
- Where possible, use hands-on concrete examples, e.g. instead of issuing pupils with a list of items and prices, give them a carrier bag full of goods from a supermarket and use large labels with the prices on them. When delivering a session on needs and wants, use large brightly coloured pictures of items to be sorted into these categories.
- Use the **pfeg** resource, 'Spending Sense' (downloadable from www.pfeg.org), aimed at supporting pupils with moderate Special Educational Needs at key stages 3 and 4. It seeks to develop pupils' understanding of buying and selling, sources of income and problem-solving money issues. It is an invaluable resource for developing financial capability in such pupils.



Online interactive resources are likely to be more effective than paper-based ones.

- The selection of resources is obviously an important factor. It is hoped that the huge number of resources recommended in this handbook will enable teachers to pick out those that are suitable for the pupils they have in mind. Online interactive resources are likely to be more effective than paper-based resources; however, care will need to be exercised as the reading levels can still be very demanding.
- Another **pfeg** resource that will help to promote financial inclusion, particularly for pupils in pupil referral units (PRUs) is 'Making Money Real – Developing financial capability in vulnerable young people'. This has case studies from PRUs and schools that have successfully run lessons in tax, global citizens, life after school, value for money, cultural and economic diversity and setting up home.
- In terms of provision for the gifted and talented, many of the resources feature extension activities that are more stretching. Some resources are structured in such a way that able pupils can navigate through the activities at their own pace. In addition, teachers can set such pupils more open-ended activities, where the opportunity for creativity is enhanced.

Key Stage 3 considerations

The resources recommended in this handbook are specified as being suitable for delivery to pupils aged 11–16, i.e. both Key Stage 3 and Key Stage 4. Many have guidelines as to how to use them within each key stage, but the flexibility of the materials ensures that they can be used across the age range. The following resources are deemed especially suitable for Key Stage 3:

- Savings and Lifeskills (Nationwide Education/DBDA – available via **pfeg** website) – contains factsheets, a glossary and pupil worksheets to help Key Stage 3 and 4 pupils address financial issues.
- Paying for it (Citizenship Foundation – available via **pfeg** website) – nine online modules covering areas dealing with Government spending, e.g. crime, health, environment.
- Spending Sense (available via **pfeg** website) - a downloadable resource aimed at Key Stages 3 and 4 pupils with moderate special educational needs).
- Young Finance Manager (Skipton Building Society) – an interactive computer game that gives pupils the opportunity to develop budgeting skills in a fun way.



Functional mathematics requires pupils to use mathematics in ways that make them effective and involved as citizens and to convey their ideas and opinions clearly in a wide range of contexts.

- Money Talks (Northern Bank/Citizens Advice Bureau – available via the **pfeg** website). This incorporates activities and information for use with young people in formal or non-formal settings.
- BBC Learning Zone clips (BBC, available via **pfeg** website); free-to-use BBC website that provides video clips of 1–5 minutes on a variety of financial topics suitable for Key Stage 3.
- Making Money Real (**pfeg** – available on **pfeg** website) – designed to support teachers and staff in pupil referral units (PRUs) and help them deliver programmes of personal finance education.
- Active Money/Turning Points (available via the **pfeg** website) – Includes a board game that can be used as part of the Active Money programme or as a tool to support other programmes of learning about financial capability and life choices.

Functional mathematics and financial capability

The Qualifications and Curriculum Development Agency (QCDA) answers the question, 'What is functional mathematics?' as follows:

'The term "functional" should be considered in the broad sense of providing learners with the skills and abilities they need to take an active and responsible role in their communities, everyday life, the workplace and educational settings. Functional mathematics requires learners to use mathematics in ways that make them effective and involved as citizens, operate confidently and to convey their ideas and opinions clearly in a wide range of contexts.' (2007)

Clearly, within this framework, there is a role for financial capability.

The relationship between functional mathematics and financial capability can be further explored by downloading the Excellence Gateway website's guide to teaching and learning functional mathematics and referring to pages 92–95:

www.excellencegateway.org.uk/page.aspx?o=201311

The following points comprise relevant information from the website:

- Financial matters might include, 'Have I got enough money to buy a cup of tea and a bun?' to the slightly more difficult 'If I catch the bus home and have chips at lunchtime, will I have enough money left to go to see a film this evening?'
- Recommended websites are www.MoneySense.com and www.moneymatterstome.co.uk
- There are suggested activities on spending and what is the best buy? Can I afford this? Personal borrowing, savings, investments, the cost of being a supporter of a football team, cooking a meal for friends, downloading music, etc.
- Entry level, level 1 and level 2 are discussed, plus advice on adapting materials from one level to another is given¹.

NB. In terms of supporting functional mathematics, all the resources recommended in this handbook will prove invaluable. In particular, see the section on 'Activities and Opportunities' (pages 14-17), which lists a large number of available resources with suggestions on how they can be used. The resources, which can be found on the **pfeg** website, are described in detail and the ways in which they can be used are outlined.

The **pfeg** Case Studies give inspirational accounts of good practice in a range of schools. In many cases, they will act as a springboard for schools to use and/or create their own unique ideas and activities.

According to the QCDA:

'Functional skills in mathematics are to be seen as a subset of the key processes set out in the programme of study. All teaching needs to contribute to the development of the key processes. The key processes of representing, analysing, interpreting, evaluating, communicating and reflecting comprise the skills necessary to be functional in mathematics.' (QCDA)

The key concepts and processes that underpin functional mathematics are listed in the 'Learning outcomes' section, together with commentary on how they directly relate to financial capability. Subsequent sections give ideas and suggestions on how functional mathematics and process skills may be integrated into the curriculum.

¹From www.excellencegateway.org.uk - Teaching and learning functional mathematics pp 104–107

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Mathematics at key stages 3 and 4

Extra-curricular activities

Opportunities for extra-curricular activities will arise from taking on financial capability within the school; the mathematics department can become a part of this. The following are ideas for exciting cross-curricular events, which will raise awareness and enthusiasm among schools and give the opportunity for mathematics teachers to work with other departments, thus enhancing the provision of cross-curricular personal finance education:

- School banks are running very successfully in many schools. A number of High Street banks help teachers to run in-school banks, contact your local branch for details.

There is also a resource called MyBnk, a mini-bank specifically designed for secondary schools and colleges. Each MyBnk branch provides savings for small interest-free loans for setting up mini enterprises. The branch is run by trained MyBnkers (pupils), with support from the MyBnk Mentor (a teacher) and MyBnk staff. The website can be found at www.Mybnk.org.

- The mathematics of personal debt will be successfully combined with the efforts of the drama and music departments in one school, where senior pupils are planning to collaborate after school to produce a Theatre-in-Education piece about the consequences of debt. This will then be presented to other years in the school and may be even toured to other schools.

Case study

Homewood School, Tenterden

Homewood School (a performing-arts college) in Tenterden ran a festival day, in which Year 8 pupils ran stalls and sideshows. The planning for this began in class but it soon became a cross-curricular activity. A **pfeg** consultant was asked to help the school give pupils more of a business focus in the running of the stalls; they were taught to put forward a business plan and even a cash-flow forecast. The pupils got so excited and involved with the project that they became committed to spending a lot of their own time pursuing it.

Case study

Towers School, Ashford

What began as a class-time activity at one school ended up as a flourishing extra-curricular activity. Towers School in Ashford ran an enterprise afternoon with Year 10 on a cross-curricular basis (teachers from mathematics, business studies and PSHE education were involved). Pupils worked in small groups to form a company and come up with a business plan for a school shop. After a 'Dragons' Den' type activity, winning groups gave their 'pitches' to a panel of judges. The winning group's ideas were taken on and the shop then planned, opened and run on a cross-curricular basis.



Cross-curricular events will raise awareness and enthusiasm among schools and give the opportunity for mathematics teachers to work with other departments.

Running a CPD session for the department

This section advises mathematics subject leaders on planning and organising their own CPD event.

Before the session

- Make sure that you know what you want to achieve. This might be to prepare the department for a scheduled series of mathematics lessons with personal finance education content or for a focus day where staff are expected to deliver a personal finance session on a carousel basis.
- Have proposed resources ready to hand to distribute and present. Try to pick out ones which are hands on, engaging and likely to appeal to your pupils.
- Have a clear idea of how the resources will serve the parts of the mathematics POS, aspects of functional mathematics and process skills that you require the pupils to achieve.
- Plan how you wish to deploy the staff as a result of knowing the strengths in the department.
- Plan the event meticulously, with timings and activities worked out.

At the session

- Explain the rationale behind the teaching of personal finance. Also explain, using the information in this handbook, how financial capability fits into mathematics and other subjects.
- Explain that using personal finance contexts can be fun and enjoyable. Comment how more than ever, young people are very aware of the relevance of money in their lives and this may help some to find mathematics a more motivating subject.
- Distribute materials and get the teachers to carry out the actual activities that the pupils will be expected to do.
- Ask for feedback, evaluation and suggestions for improvement.
- Make sure that members of the department have ownership of the materials.
- Ensure you know what provision for personal finance education is being delivered by other departments (an audit may be useful) and liaise with those departments.

After the session

- Continue to refine and improve the provision.
- Support and encourage the staff. To some of them, the idea of teaching to improve financial capability may be unfamiliar.
- Involve members of the department in the planning.
- How will you evaluate what you have achieved?
- Look to progression – how will you, as a department, capitalise on the experience and how will you carry it forward?

Other considerations

- How might you liaise with other departments, e.g. PSHE education, citizenship, English, drama, and ICT?
- What resources should you invest in to continue financial capability provision? Do you need to buy in any of the resources, and what might these cost?
- How can you use local expertise? What outside visitors would it be useful to invite into school?
- How can you best tie in lesson content to the pupils' concerns and interests?
- How can the financial education resources you are using be tied in to the scheme of work?

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Working with parents and carers

Communicating the importance and relevance of personal finance education to parents and carers is a challenge for schools but one that is worth pursuing. Although it is a sensitive issue in many homes, discussions about money within family contexts can bring considerable benefits to pupils. Parents and carers are in a unique position to aid their children's understanding of finance; they can give concrete examples of how money is managed in a household situation and can answer questions that might be inappropriate to ask in other situations.

How can schools bring parents and carers on board with respect to developing financial capability in pupils?

- Keeping parents and carers informed through newsletters is an easy way to raise the profile of personal finance education.
- Homework activities in which parents and carers are encouraged to work together with pupils to give opinions

and answer simple questions about handling money can lead to beneficial discussions at home.

- Invite parents and carers to assemblies, presentations and off-timetable activities, either as spectators or as volunteer helpers.
- Parents and carers with financial expertise may be willing to give short talks or answer questions about specific aspects of the subject.

Parents and carers can reinforce key messages about financial capability, such as the need to save, the avoidance of over reliance on credit and how to undertake financial planning and to budget carefully when purchasing. In the same way, parents and carers who themselves possess poor financial capability will inevitably set negative examples to their children, which will reinforce problems and may lead to financial difficulties in later life.

One way to counteract this issue is to involve parents and carers more fully in ongoing personal finance education activities. The following extended case study shows how one school approached this goal.

Case study

Needham Market Middle School, Suffolk

There was a pre-existing policy at Needham Market Middle School of inviting parents into the school to participate in lessons supporting their Year 6 and 8 children, and this was extended to include pupils involved in personal finance education. It proved to be a great success. The idea was to capitalise on the vast knowledge and experience that other adults can bring to the classroom.

The school identified the following rationale for involving parents in personal finance education:

- Inclusion leads to parents being more fully informed of what their children are doing in school and means parents can contribute to their children's learning through complementary activities.
- Facilitation of a better dialogue between teachers and parents, based on a greater level of knowledge.

The following benefits for personal finance education were also identified:

- Many of the financial issues discussed in school (e.g. pocket money, savings, planning for a holiday) are based on what is going on in pupils' home lives.
- Learning about money undertaken by pupils in school can be taken home and shared with the family.
- Research suggests that parents are a significant influence on their children's financial attitudes.
- Parents will nearly always have experience and skills of particular relevance to the programmes being developed – they provide a pool of firsthand experience in a wide range of financial matters including budgeting, saving, managing debt, judging value for money and preparing for life after work.
- Grandparents can be invaluable in their ability to reflect back on financial matters such as the price of goods, systems for buying and selling, and living in a society that tended to save before buying rather than the credit-reliant culture of today.

Development

During the planning of the Year 7 unit of work, 'financial responsibility: making personal choices', the thought of involving parents in a lesson surfaced. After some discussion and reflection, it was decided to try to include a parent, son/daughter lesson within the unit of work. It was decided to follow a similar format to that used with the drug education work in school.

Planning and implementation

The unit of work was written and meetings were set up with outside professionals who were to be involved in the project. The professionals were briefed on the project as a whole and their role was explained in both the parents' evening and also within the classroom. Those involved included a financial adviser, a representative from a bank involved with **pfeg**; the local Citizens Advice Bureau was also keen to put forward a representative.



Parents and carers can reinforce key messages about financial capability, such as the need to save and to budget carefully when purchasing.

The lessons:

Lesson 1

Developing pupil understanding that in order to satisfy needs and wants, the providers of goods/services will require some form of payment.

Pupils started by making a list of all statutory outgoings taken from earnings:

- Income tax
- NI contributions

Pupils then made a list of other outgoings to be paid for in a typical family year, including: council tax, utility bills, food, clothing, petrol, mortgage, pension, rent, pocket money, holidays, presents, road tax, MOT, insurance etc.

Pupils then played The Real Game for thirty minutes – an interactive game where pupils can simulate the opportunities and the responsibilities of adult life. This helped them to understand the importance of living within your means.

Lesson 2

This covered the questions:

- If we borrow money and get into debt, what can we do?
- Should we save up for things we cannot afford to buy immediately?
- What are good ways to save?

Ten-minute talks were given by a bank worker, financial adviser and CAB representative. Pupils made notes on the services and support offered by the professionals and their institutions, and this was followed by a class discussion.

Lesson 3

Pupils and parents played The Real Game for 35 minutes: the parent/carer and their son/daughter selected their home, car, holiday, etc. They then chose or were given a form of employment. As the game progressed, there were discussions about how wants/needs are catered for, as well as the finances of home life. This served to break the ice. In this way the child became more aware of how finances affect their own life now, and learnt about some of the decisions that they will have to make in the future.

Lesson 4

A feedback sheet was used for the pupils to record what they learnt, how this would be of use to them, how the lessons could be improved, etc. Pupils then played The Real Game once more. Changes in their attitudes to playing the game were noted.

The parent/carer evening

Parents/carers were invited to a one-hour meeting before the lessons took place, to be informed of the class work being undertaken by their children. They also received, an explanation of what the outside professionals would input into lessons in order for the adult and their child to begin to work together on family finances.

A financial adviser, a representative of a local bank and a representative of the Citizens Advice Bureau each gave a ten-minute presentation relating to their work in the financial world. A question-and-answer session then followed. The parents/carers were then shown The Real Game and given an opportunity to play it as well.

The parent/son/daughter lesson

The lesson progressed well, with parents who had attended the explanatory evening quickly becoming involved in discussing options with their son/daughter. Those who did not attend required a quick explanation of what was to happen in the lesson. On hand were extra adults (teaching assistants, governors, other parents), so that every child was working with an adult. In a few cases, an adult worked with two pupils.

The lesson quickly developed into more talk than play. Discussion about family finances became commonplace. It is advisable to place each pair at a separate desk so that some confidentiality can be maintained.

Feedback

Pupil feedback was a clear endorsement of the value of involving parents and carers:

'I thought that it would be just a laugh, but I really enjoyed working with Mum and I now understand how tough things can be.'

'You have to earn loads of money to live.'

'I think that I shall have to get a job to help out.'

'My dad knows loads about money.'

Parents/carers:

"I didn't realise that my son knows so much about finance."

"I have learnt a lot about finance from this, thank you."

"We can now talk more openly about life at home and how we spend the money. Hopefully things will be less stressful."

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Assessment

Assessing pupils' progress (APP) in mathematics is a structured approach to pupil assessment so teachers can:

- Track pupils' progress in mathematics.
- Use diagnostic information about pupils' strengths and weaknesses.

More about APP can be found on the archived National Strategies website <http://webarchive.nationalarchives.gov.uk/20110202093118/http://nationalstrategies.standards.dcsf.gov.uk/>

The following section should be read in conjunction with the guidance for APP given in the Assessing Pupils' Progress (APP) – Mathematics area of the Archived National Strategies website.

Effective assessment requires the use of clear financial learning objectives in conjunction with mathematical outcomes, such as those outlined in the **Teaching and learning** section of this handbook on page 12. Financial objectives can be found in either the citizenship or PSHE education Handbooks (page 8) It is the achievement of these objectives that should form the basis of assessment, although other elements should be taken into account:

- There should be opportunities for pupils to reflect on their progress in personal finance and its relevance to mathematical operations, and to think about how they can apply learning to their own circumstances.
- Personal financial capability is not just about knowledge and understanding but about attitudes to money.
- Self-assessment is a valuable tool and can help pupils to identify targets and improve their levels of learning.

Assessment should be formative in nature, helping to shape future plans and adapt teaching approaches to meet the needs of pupils. It should also be a vehicle for celebrating successes and strengths: good-quality feedback to pupils is therefore an important part of the process.

Teachers can actively involve pupils as partners in the assessment process through discussing the purposes of learning activities and to emphasising the relevance of financial capability in both present and future contexts. Pupils can also be given opportunities to identify evidence of progress in their work and reflect on their changing skills and values in addition to their knowledge. Mathematical skills should be identified and opportunities given to the pupils to demonstrate their mastery of these.

Activities that include good opportunities for assessment:

- Class or group discussion.
- Questioning pupils individually or in small groups.
- Quizzes, written tests and quick-fire mathematics tests.
- Written responses to questions, e.g. on activity sheets.
- Reflective writing following activity sessions.
- Designing and making charts and posters that show different financial topics, together with appropriate worked examples for calculations.

Teachers can also observe and make notes on pupils carrying out the following personal finance education activities:

- Collaborative problem solving, e.g. creating a budget for a fictional family.
- Presentations given by pupils in which they feed back on activities involving numbers and calculations, possibly with the aid of spreadsheets.
- Pupils using interactive resources such as board games, web activities and sorting tasks using cards.
- Designing explanatory material such as displays, web pages, videos or reports.
- Carrying out drama activities such as role-play.
- Questioning a visitor.

Teachers should aim to collect evidence from these types of activities in addition to notes made on individual pupils. All written evidence should include brief contextual information.

NB. Although not all forms of assessment relate strictly to mathematics, it is important to get the textual overview of how a pupil is assimilating the ideas related to personal finance within mathematics.

My Money Week

From summer 2009, schools can take part in **My Money Week**, a nationwide event designed to help teachers and pupils actively engage in personal finance education learning. For more information about **My Money Week** and to order your free My Money Week Activity Pack, visit www.pfeg.org



Effective assessment requires the use of clear financial learning objectives in conjunction with mathematical outcomes.

Section 4: Further information

Glossary

There is a full glossary of financial terms on the **pfeg** website. This can be accessed from the drop-down menu obtained by clicking on 'Teaching resources'. From this, the following terms have been extracted, which might prove particularly useful in the teaching of mathematics.

AER – Annual Equivalent Rate. Shows what the interest rate on savings would be if it were added to savings at the end of each year, used as a way of comparing different financial products that calculate interest at different times.

APR – Annual Percentage Rate. The cost of a loan, taking into account the interest you pay, any other charges and when the payments fall due. The higher the APR, the dearer the loan.

Available credit – The amount of money a store card or credit card company will lend you immediately.

BACS – Bankers Automated Clearing System. Fast electronic transfer of funds from one bank to another – used by internet banking, and generally taking three days to clear.

Bonds – Loans to an organisation such as a company, a local authority or the Government, also called 'fixed interest securities' or simply 'stock'. Bonds are a form of investment, usually with less risk than shares.

Capital – The amount of money you originally have, save or invest, before any interest, other return or loss is taken into account.

Capital Gains Tax – The tax paid on profits from selling investments such as shares if their value is over a certain amount.

Cash flow – A record of all the money coming in, minus any payments as they are made. If your receipts are bigger than your payments, you have a net cash inflow. If your receipts are less than your payments, you have a net cash outflow.

Cheque guarantee card – Issued by a bank or building society, guaranteeing that the amount of money on any cheque you write will be paid regardless of whether there is enough money in the account. There is a limit to the amount that is guaranteed – usually £100 or £250.

Compound interest – The usual type of interest paid on savings and loans, based on the capital plus the interest already paid so far, so the savings or the loan will grow by increasing amounts (unless money is taken out or the loan paid off).

Credit – An account 'in credit' has money available to be spent. Buying something 'on credit' means with a loan that must be paid back.

Credit cards – Credit cards are available from most banks, and allow you to borrow money up to a certain limit. When you buy something with your credit card, the amount you spend is added to your total borrowing. If you don't repay the full amount, you will start paying compound interest, which will build up each month.

Credit union – A non-profit making co-operative savings association that lends money to its members at low interest and encourages saving.

Deposit – Money put into an account; or an amount of money you pay to guarantee a purchase is saved for you to make sure you get the goods. You may need to pay a deposit when getting goods on credit.

Direct debit – An instruction to your bank to allow creditors to take money from your account.

Dividend – The payout from shares.

Equity – The value of a property on top of the amount of a mortgage secured against it: if property prices go up, your equity increases. Negative equity is where the value of your property is less than the amount of the mortgage still to be paid off.

Excess – Some insurance policies require you to pay an agreed amount of the cost of any damage if you make a claim. The insurer will then pay for anything more than this. Agreeing to a higher excess generally reduces premiums.

Fixed interest rate – An interest rate guaranteed to stay the same for an agreed period, regardless of whether bank rates go up or down.

Gilts – Bonds issued by a government to help fund its spending.

Gross – An amount of money before any deductions – usually meaning tax – have been taken. Gross profit is the amount of money made from selling goods and services minus the cost of making/providing them.

Hire purchase – A way of paying for goods over time if you don't have all the money up front (often used for cars): an initial deposit is usually paid, followed by a series of regular payments to cover the balance and any interest.

Interest – The reward you get for lending your money to, say, a bank or a building society. Also the cost you pay when you borrow money through a loan or credit agreement. It is usually worked out as a percentage (the 'interest rate') of the money you have borrowed.

ISA – Individual Savings Account. A savings account where no tax is payable on the interest.

Life insurance – A type of insurance paying out a lump sum to your family if you die. Some mortgage lenders oblige borrowers to have this kind of cover.

Loan shark – Someone who lends money and charges a very high rate of interest.

Mortgage – A type of secured loan usually taken out to buy property. If you fail to pay off the loan, the lender keeps the property.

National Insurance – A Government deduction from your wages used to pay for benefits that you might need to claim, like Incapacity Benefit, and your state pension when you retire.

PAYE – Pay As You Earn. When tax is collected from an employer before the individual is paid their salary.

Pension – An income paid out after someone retires. The Government gives tax relief on money paid into a scheme designed to provide a pension, making it more beneficial than other forms of saving. The money cannot be removed (or paid back in instalments) until a minimum age, such as 50, has been reached.

P45 – The document that an employer has to provide when you leave a job, so that the right amount of tax can be deducted from your earnings.

P60 – A summary of your pay and the tax deducted from it over the tax year.

Repayment mortgage – A property loan where regular payments cover both the interest due and a proportion of the original loan.

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Secured loan – A loan borrowed against the cost of something you own. If you fail to make repayments, the lender can then take the security – the thing you own, such as your house – instead.

Shares – An investment that makes you part owner of a company, along with all the other shareholders. Some shares pay you an income (dividends) regularly. With all shares, you accept a capital risk: if the share price rises, you will make a profit when you sell, but if the share price falls, you will instead make a loss.

Stakeholder pension – A type of pension scheme designed to encourage people to save for their own pension, by having low charges and flexible payments.

Standing order – A method of paying regular amounts from your bank account automatically. It can be cancelled by the account holder at any time.

Store card – The equivalent of a credit card run by some shops; it can only be used in their branches. Interest is usually charged on purchases made with it.

Take-home pay – The money you actually get paid after deductions such as income tax and National Insurance contributions (i.e. net pay).

Tax allowance – A threshold below which any income is not subject to tax.

Tax code – This code tells your employer how much tax-free pay to give you each time you are paid. Your tax code is worked out from your tax allowances and other tax adjustments.

Tax year – A 12-month period running from 6 April one year to 5 April the next year. Taxes, such as income tax, are worked out over this period.

Term – The time for which something lasts E.g. how long you have to pay back a loan.

Total deductions – On a payslip, this is the total amount that will be taken from your gross pay. What is left after this is your take-home pay.

Unsecured loan – A loan that does not use anything you own as security. If you do not keep up with payments, your possessions are not immediately at risk, but you can be taken to court and your credit rating can be adversely affected.

VAT – Value Added Tax. A tax paid by the consumer for goods and services.

WTC – Working Tax Credit, a means-tested tax benefit designed to encourage people into employment by providing financial help for those on low incomes.



For a full glossary of financial terms, visit the pfeg website at www.pfeg.org/glossary

Resources

For further information, please refer to the following:

Department for Education www.education.gov.uk

Personal Finance Education Group www.pfeg.org

Financial Services Authority www.fsa.gov.uk

HM Treasury www.hm-treasury.gov.uk

HM Revenue and Customs www.hmrc.gov.uk

Qualifications and Curriculum Development Agency (QCDA) www.qcda.gov.uk

The Economics, Business and Enterprise Association www.ebea.org.uk

The Association for Careers Education and Guidance www.aceg.org.uk

Enterprise Education for Schools www.enterprise-education.co.uk

Association of British Credit Unions www.abcul.coop

Citizens Advice www.citizensadvice.org.uk

Consumers' Association Which? www.which.co.uk/money

Moneyfacts www.moneyfacts.co.uk

National Consumer Council www.ncc.org.uk

Teachers TV www.teachers.tv/finance

The Citizenship Foundation www.citizenshipfoundation.org.uk

Institute for Citizenship www.citizen.org.uk

Money Matters www.moneymatterstome.co.uk

The Excellence Gateway www.excellencegateway.org.uk/pdf/TandLMathematicsHT281107.pdf

Family Investments www.familyinvestments.co.uk

Bank safe online www.banksafeonline.org.uk

Gamblers anonymous www.gamblersanonymous.org.uk

Market news <http://business.timesonline.co.uk/tol/business/markets>

Fairtrade Foundation www.fairtrade.org.uk



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