

Supporting guidance for family numeracy: exemplar materials

Background to the development of the materials

As part of LSIS's (formerly QIA's) Extending the Reach and Improving the Quality of FLLN Phase 2 programme, a suite of practical family numeracy exemplar activities for short and standard courses has been produced. The materials have been developed in response to observations by Ofsted that family numeracy programmes need to have more practical learning activities. The materials have been written to support delivery to Entry-level learners in response to research from NRDC, which shows that there is a particular need amongst women at Entry 3 or below to improve their numeracy skills. Family numeracy is a particularly effective means to reach this group.

The materials draw on examples of good practice from family numeracy planning from several providers. In addition, to promote the use of quality learning materials which are freely available, the materials include reference to activities from:

- Maths4Life; 'Thinking Through Mathematics – strategies for teaching and learning' folder
- Move On
- BBC Skillswise
- Embedded learning portal.

The materials

The materials comprise:

- an exemplar scheme of work for a short joint adult family numeracy course of 30 or more hours over 12 weeks
- five exemplar sessions plans for the above scheme
- an extended exemplar scheme of work for a standard joint family numeracy course of more than 60 hours over 19 weeks, with one whole-day session
- five additional exemplar plans for sessions from the extended scheme of work
- additional resource sheets to support the session plans.

The materials are designed for use with groups of parents and carers from Entry 2 to Level 1, but could easily be adapted for other learners. The joint sessions have been planned with children in foundation stage or Year 1 in mind. (See below.) Sessions are three hours long including a joint session of 45 minutes.

The additional sessions in the extended scheme of work provide further opportunities for the application of skills in everyday family situations, maths outside the classroom and preparation for taking numeracy qualifications.

Using the materials

The materials have been designed to provide examples of how sessions can be planned to allow learners to acquire mathematical concepts through practical, enjoyable and challenging activities, which will also help them to support their children's learning. The focus is on active learning, and sessions provide opportunities for discussion, collaborative tasks and small group work. Use of technology is included as this will help motivate learners but activities will need to be adjusted according to the equipment available. Parents and carers will want to discover the methods that their children use/will use in maths in schools; time for exploring these is included. The sessions build on the practices of family life and everyday needs. Both schemes of work prepare learners for numeracy qualifications, which they will take at the end of the course at an appropriate level.

The materials are exemplars and should be used as a starting point for planning. They will need to be adapted to meet the needs of different groups of learners and different situations. Where possible, links have been included so resources referred to can be downloaded. Use these links to further explore the web sites, which will provide a rich source of materials for you to use with your learners. The materials can be used to support the planning of a complete course or individual sessions within an existing course outline.

Adult-only session

The adult-only sessions have been designed to build on the skills of learners in a logical and progressive order while providing opportunities for reinforcement and application of skills along the way, allowing learners to make connections between topics. Adult sessions need to include initial assessment as well as assessment for learning throughout the course. Learners need to be able to identify the progress they have made and identify targets for further learning. Wherever possible, there should be clear links between the adult and joint sections of the sessions to allow adults to see the connections between their own learning and that of their children. The use in adult sessions of practical maths resources found in the primary/secondary classroom will help to support these links and promote learning. Learners' primary motivation is often to be able to support their child with maths rather than improve their own skills. Links to children's learning will help keep learners motivated throughout the course and help them discover that the key to supporting their children is having good maths skills themselves. Information, advice and guidance is included in the course to prepare learners to progress on to further learning, employment, volunteering etc.

Joint sessions

The planning of joint sessions should take into account the needs of both adults and children, and be planned jointly by the adults' and children's teachers, starting from identified learning outcomes for both adults and children. The exemplar materials are planned with Foundation Stage and Year 1 children in mind, but will need to be adapted to suit the specific needs of children taking part. They will need to take into account the age, ability and interests of the children, as well as current class topics and area of maths learning. They

should be planned to make best use of the time of year, festivals and local amenities. The cultural background of the families will also need to be built on and considered when planning activities. These are all considerations that cannot be addressed in exemplars so the *key message* is to use them as a starting point to plan your own joint sessions. Joint sessions should show parents and children that learning is fun and motivate them to continue learning at home.

Joint sessions should include the following features:

- They will build on work previously done in the adult only and, sometimes, children only sessions
- They will have appropriate outcomes meeting the needs of both adult and children
- Outcomes will be mapped to the adults' and children's curricula documents
- Outcomes will be assessed and recorded
- Joint sessions offer active learning opportunities for both adults and children
- The activities will be lively, varied and will be easily replicated by all families at home

Extracted from: 'Skills for Families Strengthening literacy, language and numeracy: Good practice guidance for planning and delivering joint session'. May 2005. For a copy of the guide, see www.skillsforfamilies.co.uk.

Children's sessions

Short and standard joint family numeracy programmes are funded to include children's sessions as well as adult and joint sessions. The children will work with a suitably qualified and experienced teacher, following a programme of learning that is specifically tailored to their individual needs in maths. This additional support will be closely linked to, and complement, learning in their class. For this reason, exemplar session plans have not been included for children's sessions as planning will be different for every group of children.

Differentiation

Differentiation has been addressed in the exemplar materials by including:

- support to learners to complete tasks depending on the needs that become apparent
- support and extension activities
- open activities, which allow different outcomes, including group discussion
- group and paired work.

It is not always helpful to categorise learners by level as they will often have 'spiky' profiles and will benefit from being challenged and stretched. For example, the activity on planning a day trip in exemplar session plan 13 of the standard course provides an open activity that all learners can take part in, but which allows for different outcomes. The activity does not limit at what level learners can achieve. For a useful discussion on differentiation in the teaching of mathematics, see 'Improving learning in mathematics', available from NCETM: www.ncetm.org.uk/Default.aspx?page=13&module=res&mode=100&resid=1442

Bilingual learners

Bilingual learners will need to be supported to understand and use correct mathematical vocabulary. Examples of key vocabulary for each session have been included in the detailed lesson plans as it will be helpful to make the teaching of this vocabulary explicit for bilingual learners in particular. Many words have specific meanings in maths that are different from their everyday meaning, such as factor, value, round. This can lead to confusion. Use of correct mathematical vocabulary is essential for all adults and children, whether bilingual or not. See NCETM 'The use of language and vocabulary in mathematics':

www.ncetm.org.uk/mathemapedia/Mathematical%20Vocabulary.

Making posters or key word books of mathematical vocabulary will help to support all learners, not just bilingual learners. Bilingual learners may also expect the school to be a place where learning takes place very formally, and may struggle to understand how children can learn through play. This can be addressed through careful preparation of parents and carers for joint session to ensure that they appreciate the learning that is taking place through activities which may appear to them to be 'play'. For a detailed discussion on teaching bilingual learners, see 'Some issues concerning EAL in the mathematics classroom', National Association for language development in the curriculum (NALDIC):

www.naldic.org.uk/ITTSEAL2/teaching/Maths1.cfm#bilingual.

Designing practical activities: a checklist

The exemplar materials aim to show how practical activities can be used to promote learning in family numeracy. Teachers will want to use their own activities, which meet the needs and interests of their particular group. Below is a checklist of what you might consider when planning a practical activity; the list is not exhaustive and you may well have other considerations. You may also not be able to answer 'yes' to all the questions as this will depend on the activity you are designing. See the Maths4Life resource, 'Thinking Through Mathematics – strategies for teaching and learning' (folder Section 2), for some principles guiding the development of resources.

Checklist

- Am I starting from the learning outcomes of the adults/children?
- Does the activity allow adults/children to achieve the learning outcomes?
- Does it build on previous learning?
- Does it expose and allow discussion of common misconceptions?
- Does it provide opportunities to use higher-order questioning?
- Does it promote collaborative learning?
- Does it encourage reasoning rather than getting an answer?
- Does it use tasks that are extendable and promote discussion?
- Does it create connections between topics?
- Does it use technology (if appropriate)?
- Does it allow active learning?
- Are there links to children's learning?
- Is it fun? Engaging?

- Is the activity relevant to parents and carers, taking into account their culture and interests?
- Does it use real-life resources?
- Are the equipment/materials I need available? Is there the right space?
- How will bilingual learners' needs be supported?
- Is the activity accessible for all learners and what specific support might be needed for learners with specific learning difficulties?
- What support and extension to the activity can I add?
- What vocabulary will the activity require?
- Is the activity simple and realistic?
- Does it allow for assessment of the planned outcome?
- Have I made use of available materials such as Move On, BBC Skillswise?
- Can I include learning outside the classroom?
- For joint activities, do they have outcomes for both adults and children, and can they be replicated at home?

Designing activities that relate directly to the everyday needs and interests of parents and carers will help them see the wider application of maths in the world around them.

Make use of what is already out there and adapt it for your learners. Using practical activities does not need to involve more preparation time and may, in fact, be less time-consuming than preparing worksheets. The web sites and resources listed below provide examples and ideas for practical activities.

Web sites referred to in the materials

- Embedded learning portal – for embedded learning materials such as Family Health, The Growing Child, Food Hygiene – rwp.qia.oxi.net/embeddedlearning/cfbtgeneralinfo.cfm
- Embedded learning interactive learning – rwp.qia.oxi.net/embeddedlearning/searchinteractive.cfm
- BBC Skillswise – www.bbc.co.uk/skillswise
- National Centre for Excellence in Teaching Mathematics (NCETM) for learning outside the classroom and ideas on making best use of resources and much more – www.ncetm.org.uk
- Move On for Hot Topics, E3 Learner Route, quizzes, practice tests and assessments, learning chunks and much more – www.move-on.org.uk
- Skills workshop for shared adult numeracy resources – www.skillsworkshop.org
- Teachers Resource Exchange – tre.ngfl.gov.uk
- ICT Games for online interactive resources – www.ictgames.com
- Woodlands School interactive resources – www.woodlands-junior.kent.sch.uk/maths/timestable/interactive.htm
- Parachute games – www.funandgames.org/parachute_games.html
- BBC Number Time resources to use with children – www.bbc.co.uk/schools/numbertime
- BBC Little animals centre maths games – www.bbc.co.uk/schools/laac
- Primary resources – www.primaryresources.co.uk/maths/maths.htm
- WMnet for interactive resources – www.wmnet.org.uk

- Interactive downloadable Carroll diagram – www.standards.dfes.gov.uk/primary/publications/mathematics/12874/nns_useict026000carroll.swf
- 5-a-day chart – www.5aday.nhs.uk/DownloadsResources/ChildrensWallchart.aspx
- Resources for The very hungry caterpillar – www.dltk-teach.com/books/hungrycaterpillar/sequencing.htm
- Sparkle box – primary resources – www.sparklebox.co.uk
- OCLC for presentation on Dewey system – www.oclc.org/dewey/resources/public.htm

Resources referred to in the materials

Partners in Learning video and pack to use with parents including leaflets. DCFS Ref: 0747-2004G

Early Years Foundation Stage Curriculum DCFS Ref: 00012-2007PCK-EN

Math4life 'Thinking through mathematics: strategies for teaching and learning' folder and other Maths4life publications e.g. Measurement. Order via www.ncetm.org.uk.

Wave 3 Resource DCFS – support materials for maths activities
www.standards.dfes.gov.uk/primary/publications/inclusion/wave3pack/pns_wave3_116605_resources.pdf

Reasoning about numbers including with challenges and simplifications –
www.standards.dcsf.gov.uk/primary/publications/mathematics/12788

Maths vocabulary cards
www.standards.dfes.gov.uk/primary/publications/mathematics/vocab_flashcards

Count and figure it out together – BSA order via NIACE www.niace.org.uk

Additional useful resources:

- *Numbers in your Head, A Handful of Coins, Cards on the Table and Casting the Dice* – BEAM publications
- *Little Book of Maths Activities* – Sally Featherstone, Featherstone Education
- Family Learning Matters Topic paper 4, Family Numeracy – NIACE
- *Getting the Most from your Interactive Whiteboard: A guide for primary schools* – publications.teachernet.gov.uk/publications
- List of stories to support maths – primary.newham.gov.uk/files/maths/Booklist-maths_from_stories.pdf
- Improving Learning in Mathematics (NCETM) – www.ncetm.org.uk/Default.aspx?page=13&module=res&mode=100&resid=1442