

PARENTS AND MATHEMATICS IN THE PRIMARY SCHOOL

Margaret Sangster

Sheffield Hallam University

A small scale study of the way a community primary school promoted knowledge about the taught mathematics of the National Numeracy Strategy with parents whose children were entering their final year (10–11 year olds). A range of strategies were explored and evaluated.

INTRODUCTION

Teachers have spent much time and energy introducing the procedures and skills of the National Numeracy Strategy (DfES, 1999) and have brought about significant changes to primary school mathematics in England and Wales. As with any new initiative in schools, adaptation is rapid and often it is not realised how much things have changed over a relatively short period of time. Keeping parents informed about these changes is an important part of the home school partnership but with the rapid pace of change and the need for schools to consolidate and clarify their own practice there can be a time lag between change and working with parents.

The mathematics co-ordinator/lead teacher in this Primary School identified the need for parents with children entering year 6 to be made more aware of the mathematics their children are expected to achieve. A small project was undertaken using their partnership link with Sheffield Hallam University Education Department. At the first meeting it was agreed that the following were the three main aims of the project:

- Informing parents about the Numeracy Strategy, including target setting.
- Informing parents about the mathematics their child will be doing in Year 6.
- Promoting ways of supporting their child at home with mathematics.

PARENTS AND MATHEMATICS

The Numeracy Strategy offers interesting comments about involving parents in children's mathematics at home:

- The involvement of parents is crucial to children's educational achievement.
- Most parents want to help their child but many don't know how.
- Teachers can affect how much and how effectively parents work with their child.
- Sending work home will not, on its own, raise children's achievement.
- Teachers can establish the nature and quality of what is sent home, allowing for feedback and discussion

(DfEE 1999 p51)

These statements have an air of authority about them but do not appear to be supported by reference to research.

Pound (1999) comments that, 'Partnership has become an easy word: on all sides we are exhorted to develop them – business partnerships, development partnerships and not least, home – school partnerships.' (p95). This carries the implication that parents are besieged by demands to co-operate and maybe not all parents may wish to do this. Over time, the relationship between home and school has altered. It was not unknown, as little as 15 years ago, for parents not to be allowed onto some school grounds let alone into classrooms. It is possible that there are parents who feel that this is appropriate and education should take place in loco parentis and in school time. This view lies uneasily with increased expectations to officially support learning at home. Such messages have been clear through government published expectations on the amounts of time spent on homework which have now been removed from the DfES website in favour of a listed features of good practice for teachers and parents (DfES,2004)

Farrow et al (1999) surveyed 20,000 10-11 year olds in 492 schools in 33 LEAs relating achievement to homework practices. There was a wide variation in the frequency of homework in this age group. Interestingly the highest test scores were achieved by those pupils who reported doing homework once a month in each of the core subjects and when homework was more frequent it was generally associated with lower attainment. There was no support for 'more is better' and they concluded that secondary schools views of homework should not be assumed to be the best strategy for primary school children.

Homework should not be assumed as the only relationship parents have with their children about school. The following quotation is from an American study by Widlake and Macleod (1984), 'When parents take any interest in schooling, the kids' ranks go up; even if they only spend ten minutes a day talking about school; even if they only wish the kids a good day and remind them to 'work hard today". This sounds very gentle and positive and manageable. Maybe some parents are expecting more from education than this. Ainsworth and Balten's study (1974) revealed that high achieving pupils have parents who are ambitious, literate and aware. Set against this Newbold (1977) found that only 50% of parents of low ability children show any interest in their progress in school. From this we can see that there are a wide range of expectations and engagement by parents of the children in our schools. Cox (1979) in a study of disadvantaged 11 year olds found that for intervention procedures to be of any value, it is vital to gain the interest and co-operation of parents.

Often parents want to help their children but do not know how. Atkinson (1992) in a survey of parents talking about their children and mathematics recorded the following response from one parent, 'I wasn't any good at maths so I don't suppose my child will be either', and, 'I cannot help my own children, because I panic as soon as they tell me the problem'. In some cases parents feel that mathematics is so important that

children must achieve even though they may suffer on the way. It is almost seen as a right of passage. Stein (1989) refers to it as a paradox, 'even though parents had unhappy experiences, they want their children to experience the same'. If true, this is not a good state of affairs. Often adults are successful at the mathematics in their everyday lives, managing complicated financial transactions, measuring accurately and calculate quantities and yet they still see themselves as struggling. Part of this perception has been their giving up mathematics at the point of failure and part generated by the evolution of approaches to mathematics in school. The advent of the National Numeracy Strategy (DfEE, 1999) and its change of style and content has disempowered these parents when it comes to helping their children with their mathematics homework.

Teachers too may be feeling deskilled as they learn the Numeracy Strategy's new approaches. This can create a lack of confidence and security which in turn can be conveyed to parents through less willingness to communicate about the subject. Time is probably needed whilst schools adjust to new initiatives and prepare themselves to share their new practices with audiences such as parents. This could lead to a period when parents do not know what is happening and therefore they find it difficult to 'do the right thing'.

There are many factors in play when it comes to establishing a working partnership but whatever the hurdles;

'The empowerment of parents helps children develop their mathematics and view it without anxiety. This enables parents and children to see mathematics as an enjoyable experience, which relates to everyday life. Effective partnership between parents and school is crucial to increasing enjoyment of mathematics for all parties involved.' (Fraser and Honeyford 2000, p91)

THE APPROACH

There were to be three sessions, the first an early evening meeting to explain the purposes of the Numeracy Strategy and homework procedures. This was to be followed by two workshops where children and parents started separately and then worked together. The first was to be based around measure and the second number. In practice, the third session evolved into an invitation to join their children in a problem solving workshop run by an outside agency for year 5 and 6 children. Observation notes were taken, parents were asked about maths homework issues for them and post session evaluation discussions took place. Twelve children were interviewed in groups of four. They were asked how they felt about doing mathematics at home.

There were aspects of the Numeracy Strategy that parents were understandably unaware of and were keen to know about. Issues for them centred around what was expected of their children and how to support their children at home. The first part of the meeting informed them of how and why the Numeracy Strategy had been instigated and the way it worked. There was a focus on mathematics lessons now

having a stronger emphasis on a range of calculations, giving a higher profile to mental mathematics and problem solving and more thinking and talking taking place with the result of less recording. Handouts were provided on the objectives for the year, plus examples of the mathematics. An explanation was given about homework times and expectations. The parents and children took part in some calculating which generated the opportunity for a discussion about a range of methods. The second part of the meeting was informal with opportunities to try out some Year 6 activities and talk to the teachers.

The second session was aimed at promoting children and parents working together at mathematics. This was done by inviting the parents into school. The session began with the children working in class at a measure activity and the parents working together in another room on a task requiring them to share knowledge of different types of measure. The children and parents then came together and, working with their own child, they did a measuring task. This contributed to a whole group graph comparing a person's height to the area of their footprint. The plenary was focused on interpretation of the graph.

The third session was an invitation to take part in a problem solving session with their children. The session was run by an outside agency and was a series of tasks presented to groups of children. The children were in groups pre-determined by the co-ordinator and were predominantly friendship groups. Teachers and parents could circulate the groups or join in with a single group. They could choose to observe, prompt or join in. The atmosphere was fairly informal, a fun session, but the children were asked to reflect on the strategies they used.

SUMMARY OF THE EVALUATION

In evaluating the session, issues which arose for the school were:

- The need to inform parents about the National Numeracy Strategy as it has fundamental changes in its approach to mathematics. (For example, the increased emphasis on mental mathematics and the acceptance of a variety of informal calculation methods as well as the sheer scope of the objectives).
- The need to have clear procedures for homework, including when it takes place and the time that should be spent on it.
- The need for the homework to have intrinsic instruction in case the child is confused or has forgotten.

Issues which arose for the parents were:

- Knowing which method to use to help the child (They found it reassuring to know that their methods were acceptable along with many others).
- Having a fallback of written instructions if the child cannot explain what they have to do for homework.

- Not having a lot of written homework at weekends as this was sometimes difficult to complete when children are having to visit relatives or the family is going away.
- Knowing times tables is important and wanting to match the school method of learning them.
- Coping with different teachers' styles, maths content and messages as their child moves from class to class and school to school
- Sometimes experiencing tension between what a child wants to do when they get home and the need to ensure homework is completed (15 minutes duration appears to be agreeable)
- Having a mixture of shared and independent tasks is helpful as there is not always someone available to play a game.

Issues for the children were:

- Of the twelve children asked the higher achievers preferred puzzles and problems for homework whilst those who found maths more difficult preferred 'sums'.
- Time was the main problem for children with all but one feeling homework intruded into their out of school/free time. Alongside this, ten of the children appeared to recognise the need for homework and made reasonable suggestions of how much time should be spent on it. Two children were quite vehement in their arguments against doing it. Interestingly, in this small sample, there appeared to be a correlation between maths achievement and willingness to do maths homework.
- Nine of the children identified someone at home that they could ask for help. Eleven nominated helpers, most of whom were parents, siblings, grandparents or friends. Three children worked entirely on their own. All but one child thought there was someone at home who is good at maths. Some of the support problem is alleviated by children staying to Homework Club. The children who attended found help readily available here.

DISCUSSION

The three sessions were very different experiences for the parents and children. The move away from formal meetings was considered to be positive. This was seen as a better way to build a partnership of school and parents. All three meetings had opportunities for parents to participate with their children in mathematics in a way which attempted to be non-threatening and supportive. It was difficult to ascertain whether parents felt uncomfortable at any time. Getting parents to work with their children had been considered as an important part of the third objective. It does raise the question of whether parents prefer to come and listen or come and take part. Possibly, the parents who did not attend felt this. There was an increased interest among the parents after the second session which suggests the working

together was an acceptable move. An area which was felt worth further exploration was that of helping to develop ways of working with your child. Doncaster FE College is currently running a project with this focus in partnership with local schools.

The home school partnership is a three way relationship where all three partners need to have sufficient information, both about the way the maths is done and the objectives to be met. This school consider this relationship very important and are continuing to work on ways to involve and support parents in the partnership of educating their children. At the same time they are supporting pupils with the provision of a homework club which enables the children to complete work and receive support. This is invaluable in giving individual children the chance to begin each day knowing they have met the expectations of the teacher and have consolidated their learning. The homework club has proved a successful strategy for the school and the children but clearly leaves the parent out of the partnership equation. This in itself creates a tension between parent school partnership goals and meeting the demands of school in terms of completing homework.

Homework became one of the main issues of the first meeting and really useful information was provided by parents. This led to the school making a series of decisions. Homework should have clear instructions in case the pupil forgot what was to be done. If calculations were involved which were to be done in a particular way then an example would be provided. A variety of mathematical tasks was welcomed. These should not always be shared tasks as an adult was not always available to play a game. Weekend homework is difficult, particularly for children visiting separated families, so extra days were to be given or the weekend avoided. A schedule of subjects and days was helpful to parents chasing up homework to be done.

CONCLUSION

The small scale project was a worthwhile venture for the school and hopefully for the parents who participated. For the school, they were able to promote messages about the Numeracy Strategy and School working practices. They also learned a lot from the parents about homework. The parents learned about what their child would be doing, and gained reassurance about their own ways of calculating. They were also able to contribute which is an important part of partnership. The children gained from working with parents in a school setting where they have autonomy.

The outstanding issues are, as always, the parents who choose not to enter the school. A second issue for further consideration is the tension between involving parents and running a homework club. A third issue was the format of the study did not lend itself strongly to promoting good ways of working between parent and child. This would probably be a goal more suited to a long term model because there should be a gradual build up of a working relationship between parent and child.

'Building and maintaining the link is time consuming and may at times seem a thankless task but effective partnerships between home and schools are incredibly valuable and really help children to achieve their potential'. (Fraser and Honeyford p97, 2000)

REFERENCES

- Ainsworth and Balten 1974 cited in *NFER A Review of Research in Mathematics Education: Part B, Research on the Social Context of mathematics Education* NFER Nelson
- Atkinson, S. 1992 *Mathematics with Reason: The Emergent Approach to Primary Mathematics* London, Hodder and Stoughton
- Cox 1979 cited in *NFER A Review of Research in Mathematics Education: Part B, Research on the Social Context of mathematics Education* NFER Nelson
- DfEE 1999 *The National Numeracy Strategy* London: HMSO
- DfEE 1999 *NNS Three Day Course booklet, OHT 9.2* London: DfEE publications
- Farrow, S., Tymms, P. and Henderson, B. 'Homework and Attainment in Primary Schools' in *British Educational Research Journal* Vol 25:3 June 1999 p323-342
- Fraser, H. and Honeyford, G. 2000 *Children, Parents and Teachers Enjoying Numeracy* London: David Fulton
- Newbold, 1997 cited in *NFER A Review of Research in Mathematics Education: Part B, Research on the Social Context of mathematics Education* NFER Nelson
- Pound, L. 1999 *Supporting Mathematical Development in the Early Years* Buckingham: Open University Press
- Stein, G. 1989 *The Influence of parents' mathematical experiences on their children's mathematics* MA thesis, University of Surrey, (in Pound, L. 1999, p 96)
- Widlake, P. and Macleod, F. 1984 *Raising Standards* Coventry: Community Education Development Centre, (cited in Pound, L. 1999)
- DfES 2004 Homework: <http://www.dfes.gov.uk/primary/homework>