

University of Dundee

Problem-Solving Resources

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Problem Solving

"The ability to solve problems is at the heart of mathematics for many pupils this will require a great deal of discussion and oral work before even very simple problems can be tackled in written form".

(Cockcroft, 1982).

For more information on this resource please contact staff at the [Centre for Peer Learning](#).

About	Parent Guide	Teacher Guide	Children's Voices
Evaluation	Evaluation Results	Case Study	National Project
References	Useful Links	Resources	

What is "Problem-Solving"?

Peer tutoring of reading is now commonplace in both in primary (elementary) schools and high schools. For both same-age and cross-age tutoring, the structured "Paired Reading" method has been intensively researched and found to be effective, yielding substantial gains in reading ability and in motivation for both tutors and tutees if organised correctly. The national "Read On" project in Scotland extended this to give a more conscious focus on higher order reading and thinking skills. The main thrust was cross-age tutoring between whole classes of older and younger pupils (students) in the primary (elementary) school, with some schools also developing a parallel home-based parental involvement programme.

Subsequently BP provided funding to extend a similar model to learning in mathematics. This project had a particular focus on problem-solving, an area considered extremely important by the Scottish executive in the light of international comparisons. For instance the recent report: "Standards and Quality in Primary Schools: Mathematics 1998-2001; A Report by HM Inspectorate of Education" lists "problem-solving and enquiry" as the first area needing improvement in mathematics education in Scotland.

The pilot phase of "Problem-Solving with BP" took place in the school year 2001-2002. Almost all of the 32 local education authorities (school districts) in Scotland participated in the in-service training, involving well over 150 schools. Subsequently, many of these schools developed pilot projects. Training for pilot teachers took place through November 2001. In January 2002, the pilot teachers launched their own in-school programmes of intensive activity, in most cases concluding before Easter. The remainder of the school year involved follow-up, development, reflection, evaluation, and planning for the future.

The Aims of the Problem-Solving project are to:

- Raise mathematical achievement in problem-solving
- Deepen mathematical understanding
- Improve mathematical competence in school and in everyday life
- Raise the mathematical self-confidence of pupils
- Increase motivation and enthusiasm for maths in and out of school
- Strengthen the partnership between home and school
- Strengthen the partnership between home/school and industry
- Maintain close links to the 5-14 curriculum

The Options in Problem-Solving with BP:

	Peer Tutors	Parent Tutors
Maths Games		
Maths Curriculum (Duolog Maths)		

Some schools combine these options in all kinds of creative ways, while other schools take different options for different groups of pupils at different times.

Both Read On and Problem-Solving are based on these principles:

- integrate with existing national strategies and complement school development plans
- structured, organised and manageable within existing school resources
- evaluated to ensure aims and targets are met
- best value and excellent cost-effectiveness is demonstrated and sustained
- designed to be sustainable and replicable

A DVD is available at a nominal charge (£15 + £5 p&p). Order from the Centre for Peer Learning, School of Education & Social Work, University of Dundee, Dundee DD1 4HN, tel 01382 383000, email k.j.topping@dundee.ac.uk. Payment by cheque (made payable to the University of Dundee) is required with the order.

The Problem-Solving project is supported by BP [\[Logo\]](#) and The Scottish Executive [\[Logo\]](#), in addition to virtually all the local education authorities in Scotland and a great many schools, parents and pupils.

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