Closing the attainment gap with Numicon

Numicon is a multi-sensory and active teaching approach using real-life contexts, concrete objects and conversation to build a sound understanding of maths for all children in Reception to Year 6.

Children with special educational needs and disabilities, as well as those working below age-related expectations are supported by Numicon Breaking Barriers resources. These specially designed resources accelerate the progress of the children who need the most support.

All Numicon resources are supported by NCETM (National Centre for Excellence in the Teaching of Mathematics) - accredited professional development.

Target group
Children aged 6-11, but also those of secondary age, including children with SEND and those experiencing significant difficulty with maths.

What impact has Numicon had on schools?

Glyncollen Primary School, Swansea

At Glyncollen Primary School, Numicon is the main framework for teaching numeracy from Foundation Stage to Year 3.

Teachers of Years 4, 5 and 6 use Numicon ‘to represent concepts visually’, helping children with a range of challenging concepts, including fractions, percentages, ratio, proportion and probability.

Intervention groups at Glyncollen Primary ‘use Numicon to develop basic number skills and as a means for addressing misconceptions.’ These groups are ‘set from a range of assessment data and their progress closely tracked and monitored.’

Suzanne Hamilton, Deputy Head Teacher, notes that, with Numicon, these ‘targeted groups showed a significant increase in basic skills.’

Glyncollen have found that Numicon ‘engages and enthuses children.’ Suzanne notes ‘a change in dispositions of learning numeracy’ in the school with Numicon, adding that ‘children say that they enjoy number now.’

Suzanne describes the way that ‘the children thoroughly enjoy using Numicon.’ Importantly, she adds that they ‘enjoy talking about the things they’ve done’, demonstrating their developing reasoning and problem-solving skills.

The staff at Glyncollen ‘have adopted the approach enthusiastically and training has been undertaken.’ What’s more, the school has run parents’ sessions, which Suzanne explains are to ‘ensure that there is a collaborative approach to teaching.’

You can find about the impact Numicon has had in other schools in this report: http://fdslive.oup.com/www.oup.com/oxed/primary/math/numicon/Numicon_research_impact_study_2011.pdf
Why is *Numicon* suitable for schools in Wales?

| Using data to track the progress of disadvantaged learners | Each *Numicon* Activity Group has suggested key questions for assessment. Other assessment opportunities focus on observing children’s actions and recording use of language - both are key indicators of children’s understanding.

In addition, key milestones include the learning that is essential before children move on, and are clearly marked in planning charts, giving the teacher comprehensive guidance for monitoring progress and deciding next steps. Tracking spreadsheets for the milestones are also available as part of a wealth of assessment resources on *Numicon Online*.

*Numicon* Explorer Progress Books allow teachers to gather evidence of children’s achievements with opportunities to assess individual children’s understanding and monitor progress.

*Numicon* Test Practice Questions provide ideal preparation for National Curriculum Tests, with full coverage of all curriculum areas at Key Stages 1 and 2, and links back to the *Numicon* Activity Groups to address any areas of weakness. |
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| Focusing on the development of disadvantaged learners’ literacy and learning skills | *Numicon* offers many opportunities to foster a positive attitude to maths. Misconceptions can be quickly identified by the teacher and children can be encouraged to look carefully, try again and self-correct. A sense of achievement can be gained by simply repositioning Number Rods or moving *Numicon* Shapes.

Each *Numicon* Activity Group has been carefully trialled to ensure it is ‘low-threshold, high ceiling’. This gives the whole class access to the learning while providing meaningful challenge to help children reach their full potential. |
| Developing the social and emotional skills of disadvantaged learners | *Numicon* can be used flexibly with a whole class, groups, pairs or in one-to-one sessions.

Collaboration and communication are central to the *Numicon* approach. When children are working together with *Numicon* apparatus there are many opportunities for sharing ideas and helping and prompting each other. |
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<tr>
<th>Tailoring the curriculum to the needs of disadvantaged learners</th>
<th>Numicon Firm Foundations resources assist practitioners in delivering high quality early years provision which is essential to establish secure foundations in children’s understanding of maths. Numicon Breaking Barriers resources have been designed specifically for pupils who are having difficulty in basic number understanding or those with SEND. The aim of the resources is to enable all pupils to have a positive experience of learning mathematics and to develop the sound foundation of basic number understanding that is essential if they are to achieve their individual potential. Numicon Professional Development includes the Numicon Intervention Programme to support teachers and teaching assistants to provide effective intervention sessions.</th>
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<td>Providing enriching experiences</td>
<td>Numicon uses real-life contexts to engage children in meaningful mathematical communication, with teachers, with peers and with themselves, helping them to develop strong problem-solving and reasoning strategies. Open-ended activities and self-directed investigations give children ownership of their learning while providing the teacher with key indicators of understanding and progress. Numicon Software for the Interactive Whiteboard can be used to create dynamic teaching sessions to introduce key mathematical ideas to the whole class. The software offers teachers a rich library of images and models to use in whole class teaching. Pictures of everyday objects can be used to help children use and apply their arithmetic.</td>
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<td>Developing the expertise of staff to meet the needs of disadvantaged learners</td>
<td>All Numicon resources are supported by NCETM (National Centre for Excellence in the Teaching of Mathematics) - accredited professional development. More information about Numicon Continuing Professional Development can be found at: <a href="http://www.oxfordprimary.co.uk/numicon-pd">www.oxfordprimary.co.uk/numicon-pd</a> or by contacting your local educational consultant.</td>
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<td>Engaging parents and carers of disadvantaged learners – they communicate and work face-to-face to help them and their children to overcome barriers to learning</td>
<td>Numicon Explore More Copymasters are activities that can be sent home with children. These activities offer further opportunities to practise and discuss maths in a fun, engaging way outside the classroom, with step-by-step guidance provided for the parent or supporting adult. Further support for parents in understanding how maths is taught at school can be found at <a href="http://www.oxfordowl.co.uk/maths">www.oxfordowl.co.uk/maths</a></td>
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**Find out more**

Resources: [https://global.oup.com/education/content/primary/series/numicon/](https://global.oup.com/education/content/primary/series/numicon/)
Professional Development: [https://global.oup.com/education/content/primary/professional-development/numicon/](https://global.oup.com/education/content/primary/professional-development/numicon/)