‘THAT’S WHAT YOUR BRAINS ARE FOR’

AN ACCOUNT OF THE NORFOLK THINKING SCHOOLS, THINKING CHILDREN PROJECT

John Harris

'Thinking is messages in your brain' (Adelle, 6)
'The more thinking you do, the more clever you get' (Chelsea, 7)
'Thinking lights your brain up' (Josh, 6)
'Thinking is giving yourself ideas' (Emma, 6)
['Philosophy] helps us to think. That's what your brains are for.' (Evie, 8)

Foreword *Foreword* *Foreword* *Foreword*

All over Norfolk children are working in new and creative ways to extend their thinking. A growth of interest in the development of children's thinking skills has stemmed from research into how our brains work. Recent neuro-science suggests that intelligence has a variety of forms and is not a fixed trait, but can be constantly developed if we stretch our brains in the right way. Knowing how rather than knowing what is becoming increasingly important in children's learning. The challenge for teachers is to provide opportunities in tune with pupils' different learning styles to help children become more self-reliant and effective learners.

To explore the ideas of 'brain-compatible learning' a partnership between Norfolk LEA and over seventy primary schools has been trialling new methods in classrooms. Each school chose one focus to research and was supported by the LEA through a series of termly conferences and advisory visits. This project report tells the story of that journey, often in the words of the participants themselves. We are very proud of their achievements.

Dr Bryan Slater
Director of Education

Preface

This report is the outcome of one of those rich series of interchanges, activities, debates and risk-taking that happens when a community of educators trusts each other and rises to the challenges of enriching the learning of our children. The project you will see described in this publication has energised teachers, headteachers, advisers, governors and children across Norfolk. It is an excellent example of what can be achieved when we work in partnership and when teachers can control and shape curriculum development. The work reported here represents the immense energy of our teachers. It needs to be understood that this work occurred as well as meeting the requirements of the National Curriculum, not as an alternative to it. We all need to support teachers to take some risks, use their creative skills and unleash their imagination. This is essential if we are to have primary schools that don't just reach expected standards but also fire the enthusiasm of children and teachers to engage in learning of the highest quality. We are delighted, in Norfolk, with the impetus this work has given to helping children not only cover the curriculum but also to uncover it and discover it. We hope you enjoy reading about it as much as we enjoyed being part of it. I would like to express my thanks to all who took part in the programme and in particular the team of headteachers and advisers who worked tirelessly to make all this happen.

Fred Corbett
Assistant Director of Education

Acknowledgements *Acknowledgements*

Thank you to all teachers and support staff who made the project such a success, especially headteachers and key teachers who led the work in their schools.

Thanks also to the members of the advisory service who supported the project, and to headteacher and adviser members of the steering group. Particular thanks are due to Helen Banks and Roger Eagle, the other co-directors of the project, and to Fred Corbett for providing the initial impetus and for continued support throughout.

Many thanks for the skilled editorial contribution from the National Primary Trust, and from others who read the report in draft form and made suggestions for improvement.

Finally, thanks to all the children in the project schools, especially those whose words of wisdom are used in this report, or whose work features in the illustrations.

Note: the names of some children quoted in the report have been changed.

The following schools have contributed material to this report

Alburgh with Denton CE First School
Angel Road First School
Arden Grove First School
Ashleigh Infant School and Nursery
Avenue First School
Blackdale Middle School
Brockdish CE VC Primary School
Brooke VC CE Primary School
Catton Grove Middle School
Cecil Gowing First School
Chapel Break First School
Clackclose Community Primary School
Clover Hill First School and Nursery
Colby School
Colman First School
Costessey Infant School
Drayton Community First School
Eastgate Primary School
Firside Middle School
Forncett St Peter CE VA Primary School
Ghost Hill First and Nursery School
Heather Avenue First School
Hempnall School
Hethersett Woodside First School and Nursery
Hevingham Primary School
Homefield VC First School
Horning Community First School
Ingoldisthorpe CE VA First School
Kelling Primary School
Kinsale First School
Knowland Grove Community First School
Little Melton First School
Martham First School and Nursery
Mattishall Primary School
Mousehold First and Nursery School
Mulbarton Community First School
Mundesley First School
Nelson First School
Nightingale First School
Peterhouse First School
Ranworth First School
Reffley Community School
Rollesby First and Nursery School
Salhouse VC Primary School
South Wootton First School
Spixworth First School
St George's First and Nursery School
St Mary's (Endowed) VA CE Primary School
Ten Mile Bank School
The Douglas Bader School
The James Bradfield CE VC C Primary School
Thorpe Hamlet Middle School
Trowse Primary School
Tuckswood First School
Wicklewood Primary School
Woodside First and Nursery School

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Norfolk is a large rural education authority in the east of England; in terms of population, it is the seventh largest in the country. At its heart is the city of Norwich, with a population of about 121,000. A number of smaller urban areas, for example, King's Lynn and Great Yarmouth, are scattered around the perimeter. There is a network of small market and seaside towns (Diss and Cromer, for instance) and between them large areas of mainly farmland which in many places are sparsely populated.

There are over 450 schools in the county. About 400 of these are primary schools, varying in size from 20 pupils to over 600. Many cater for the full primary age range of four to eleven years old (Yrs R to 6); there are also infant schools (Yrs R to 2), junior schools (Yrs 3 to 6), first schools (Yrs R to 3) and middle schools (Yrs 4 to 7). The County Council is committed to ensuring that pupil transfer to secondary education is aligned with the end of KS2. Schools in some areas have been re-organised along these lines and a programme has been set to complete the process by 2006.

The standards attained by pupils in Norfolk at the end of their primary schooling are close to the national average. Standards have risen faster than in most parts of the country but do not quite match those attained by pupils in similar areas. Improving this picture has been a central concern for the education service through the priorities identified in the Education Development Plan. The *Thinking Schools, Thinking Children* project, outlined in this publication, has been one contributory strand to achieving the LEA's objectives through improving the quality of children's learning in schools.

In the first section, the origins, background and aims of the project are outlined. This is followed by a consideration of the schools involved, the supporting conference programme and the research methodology. The second section focuses on the children, describing in detail under five main headings, the variety of activities undertaken to support and extend their learning styles. Finally the outcomes are examined and the key messages drawn from the project.

Throughout extensive use of quotes from children, teachers and others is made to illustrate the progress and impact of the project. As the whole programme has been so enthusiastically received, this publication can in fact be considered an interim report rather than the final word as the project has now entered a further development phase.

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The origins of the project

The genesis of the 'Thinking Schools, Thinking Children' project was an opportunity waiting to be seized. The Norfolk Association of First and Primary Headteachers invited Trevor Hawes to be the keynote speaker at its annual conference in April 2000. The theme of the conference was 'Neuro-scientific research and brain compatible learning', and it was attended by about seventy Norfolk headteachers. Also present on that occasion was the recently appointed Head of the Advisory Service, Fred Corbett. In his concluding address, the headteachers present were invited to express an interest in a long-term project to explore further the ideas which had been presented. This was to be related to the LEA's first Education Development Plan, which had as one of its key priorities the improvement of learning opportunities for Norfolk pupils. At the end of the speech, we were almost buried in the rush to sign!

The day concluded with a meeting of the Head of the Advisory Service and the three other advisers present on that occasion. Huddled in the corner of the conference room, the broad outlines of the project were sketched in.

Outline Of the project	pursue the themes of 'brain compatible learning' outlined at the conference; make use of action research methodology as a stimulus for school improvement; include all schools which had already expressed an interest but be open to all other primary schools in the LEA; exemplify the partnership of the LEA and Norfolk schools through its direction and financial support; make a significant impact on the quality of the curriculum offered in the participant schools; demonstrate, in its outcomes, clear improvements in learning for Norfolk children.

Charged with the task of leading the project, the three Primary Advisers then met to devise their plan of action and agreed the following features.

- It would be under the direction of a steering group, consisting of headteachers and advisers, which would meet on a regular basis to review progress and determine future action.

- All participant schools should be required to nominate a key teacher to lead the project in the school. The participation of the headteacher was also seen as crucial to ensuring that the project was given due emphasis in the school's development planning.

- Regular conferences would be held with the key teacher and headteacher from each school invited to attend. Conferences would include high quality keynote speakers and opportunities to discuss work in progress; they would be funded by the LEA, though schools would be required to meet their own supply cover costs.

- The project would be 'kick-started' by giving all teaching (and, ideally, non-teaching) staff the opportunity to experience Trevor Hawes' presentation at first hand. This would involve a 'roadshow' of conferences for clusters of schools (the cost of this would be borne by schools). All schools would be given a copy of *Effective Teaching and Learning in the Primary Classroom* by Trevor Hawes and Sara Shaw as a project handbook.

- A bookstall would be provided at all conferences to encourage teachers to read as widely as possible.

- Schools would receive visits from advisers during the course of the project in order to support them with key phases of its implementation.

- Mechanisms would be set up to enable schools to share good practice with one another through informal networking.

- At the end of the project schools would be required to submit an evaluation report giving a detailed account of the impact of the project on children's learning.

A letter was sent to all Norfolk primary schools from the Head of the Advisory Service, inviting them to join the project. Meanwhile four headteachers were nominated to join the steering group. The response to the invitation was overwhelming: over eighty schools expressed their interest - we had envisaged about fifteen or so. Suddenly, the project had assumed a completely different scale.

Points for Consideration

What might be the catalyst for a major curriculum development project in your LEA?

Who are likely to be the key change agents?

What effective ways are there to launch a major project?

The theoretical background

Most of what is now known about how the brain functions has been discovered in the past ten years. The technologies of brain scanning have made it possible for neuroscientists to study the processes of the brain as it works. There is a constantly developing understanding of what areas of the brain are used for different activities, how they inter-relate and inter-react, and how this varies from person to person. It is possible to see how parts of the brain grow in response to stimulus or wither as a result of neglect.

This research has stimulated fresh thinking about the notion of intelligence. Redefining intelligence as "the ability to solve problems or fashion products that are of consequence in a particular cultural setting or community", Howard Gardner has suggested a model of 'multiple intelligences' to reflect the immense variety of human endeavour and achievement. Each person, he argues, possesses all these intelligences to some extent. Individual profiles of intelligences are unique, however, just as fingerprints or signatures

are. One particular intelligence - different ones for different people - probably acts as the entry point to engage the others. Thus Gardner stresses that intelligence is a learned attribute, neither fixed nor finite.

The concept of 'emotional intelligence' has also gained currency, thanks to the work of Daniel Goleman, among others. Pointing out that people who excel are those who are marked by self-awareness, persistence, motivation, empathy and social deftness, Goleman asserts the need to nurture these qualities as a crucial part of the educational process. He provides a potent reminder that learning is not purely a cognitive activity and that the success or failure of learning relies heavily upon feelings. He also demonstrates with clarity the devastating costs of 'emotional illiteracy' and suggests ways that it might be overcome.

In one sense, there is nothing new in this. While some of the neuroscientists' findings overturn long-cherished beliefs, others simply confirm what has long been known about human learning. What makes the new discoveries so exciting is that they provide clinical evidence of what previously could be deduced only by empirical observation. This gives it a unique power. An intriguingly fresh light has been thrown onto the work of the great educationalists of the past. It may have been known that it was so; now it is possible to say with certainty why.

This explosion of new knowledge about learning obviously has far-reaching implications for school organisation and teacher behaviour. It makes it possible to imagine a curriculum which is genuinely 'brain-compatible' and which, in John Abbott's phrase, goes with the grain of the brain. Yet teachers are still working within structures which are shaped by earlier understandings.

True, the revision of the National Curriculum in 2000 shows some signs of being influenced by the new knowledge. In defining the values, aims and purposes of the National Curriculum, it states:

> By providing rich and varied contexts for pupils to acquire, develop and apply a broad range of knowledge, understanding and skills, the curriculum should enable pupils to think creatively and critically, to solve problems and to make a difference for the better.
>
> It should enable pupils to respond positively to opportunities, challenges and responsibilities, to manage risk and to cope with change and adversity.

For the first time, five Thinking Skills have been identified as follows:

Information Processing skills	locate and collect information sort, classify and sequence compare and contrast identify and analyse relationships
Reasoning skills	give reasons for opinions and actions draw inferences and make deductions use precise language to explain thinking make judgements and decisions informed by reasons or evidence

Enquiry skills	ask relevant questions pose and define problems plan what to do and how to research predict outcomes and anticipate consequences test conclusions and improve ideas
Creative thinking skills	generate and extend ideas suggest hypotheses apply imagination look for alternative innovative outcomes
Evaluation skills	judge the value of what they read, hear and do develop criteria for judging the value of their own and others' work or ideas have confidence in their judgements

There is little guidance, however, on how these skills might fit into the overall curriculum structure. All we have, enigmatically, is the following statement:

> By using thinking skills pupils can focus on 'knowing how' as well as 'knowing what' - learning how to learn … Thinking skills … are embedded in the National Curriculum.

The use of the word 'embedded' is interesting. It is, presumably, intended to imply that thinking skills permeate the design of the National Curriculum. However, it is tempting to interpret it as meaning that thinking skills are so deeply buried that effort must be applied to digging them out.

Beginning this work was the overarching purpose of the project. How could the new knowledge be used to inform teaching? What does 'learning to think' look like in classrooms?

The aims of the project

The first meeting of the Steering Group was held on 5 May 2000, the day after the deadline for joining the project. A considerable amount of time was spent contemplating the implications of working with so many schools, which ranged from the search for a bigger team of advisers to the need for larger conference venues. The Steering Group also defined the expected outcomes of the project.

Expected outcomes	refreshed confidence and creativity for teachers; increased awareness and understanding of research about learning and the neuro-sciences; the development of action research based on this understanding; increased focus on evidence-based practice; increased understanding of their learning styles for children and adults; schools and the advisory service working towards a common understanding of effective practice in teaching and learning; improved effectiveness of teaching and learning for all children; support for the review and development of teaching and learning policy and practice; project report including case studies of successful practice.

The Steering Group met on a regular basis (at least once a term) throughout the duration of the project. It was an important ingredient in the success of the project as it symbolised the partnership of the LEA with its schools, and provided an invaluable perspective which helped guide the project through its problems and difficulties.

The title 'Thinking Schools, Thinking Children' was also confirmed at this first meeting, in order to make the link between reflective practice and developing children as thinkers. The idea of a competition for a project logo was also mooted. The winner was a delightful drawing which vividly captured the spirit of the project.

Points for Consideration

What might be the key aims of a curriculum development in your LEA?

How will the project impact on the targets in the education development plan?

What structures and mechanisms would be most useful in directing it?

The project schools

Seventy-seven schools responded to the invitation to join the project (a few sneaking in late as the deadline was not adhered to strictly). They represented a broad cross-section of primary phase schools in Norfolk: first schools (4 - 8) and primary schools (4 - 11), with or without nurseries, middle schools (8 - 12) with two infant schools, one junior school and one nursery school. Middle schools were under-represented in the sample (reflecting the origins of the project in the first and primary schools' conference). Schools varied from 30 on roll to more than 500, broadly reflecting the overall pattern of school size in the county. Fourteen were small schools, that is, with 100 pupils or fewer on roll. The geographical spread was wide, though a fairly high proportion were clustered in and around Norwich.

A few schools had some prior experience of the ideas presented by the project. For example, Karin Murris had run a number of successful courses in the county on 'philosophy through story books'. Only a tiny number of schools, however, would claim that such approaches were embedded in school practice. For most schools, the ideas being presented through the conferences were refreshingly new.

The dropout rate from the project was very low. A few schools decided they had more pressing priorities, or were unable to sustain the commitment made. The cause of withdrawal was often the loss of the headteacher or key teacher (or, in the case of one small school, a complete change of teaching staff).

Of the seventy-one schools which remained with the project throughout its two year period, fifty-seven contributed towards the final evaluation. Most of the schools which failed to produce a report had specific reasons for not being able to do so, again generally relating to staff changes.

The Thinking Conferences

All teachers (and many teaching assistants) in the project schools were given the opportunity to hear Trevor Hawes' presentation on 'Effective teaching and learning'. It was hoped everyone would be inspired in order to ensure widespread enthusiasm at the outset.

Initially, schools were encouraged to group together to organise these sessions for themselves. As the number of schools in the project grew, however, it became clear that there was a need for central organisation. Larger venues were accordingly booked, and the schools were invited to select from the various dates offered. These sessions took place during the autumn term of 2000 and the spring term of 2001 with the costs being shared between the LEA and the schools.

The day conferences also played a key part in the overall project design. These were wholly funded by the LEA and were held every term, beginning in October 2000, for six consecutive terms. Each project school was entitled to send two delegates: this was generally the headteacher and the key teacher.

The series maintained a remarkably high standard. Speakers included Roy Leighton, Robert Fisher, Alec Fisher, Kieran Egan, Karin Murris, Joanna Haynes, Viv Baumfield, Luke Abbott, Oliver Caviglioli and Rob Walker. There were also frequent opportunities for participants to discuss work in progress, generally with the support of the advisers attached to the project and, as always at successful conferences, there was much informal networking.

The conferences were keenly looked forward to. They enabled schools to take stock and provided a fresh impetus to their work. There were always new ideas to try out, new perspectives to consider, new understandings to be reached. They were occasions where the buzz of learning was palpable, and enthusiasm and energy levels ran high. A few extracts from the conference evaluations illustrate this:

> *All round a brilliant day … should have been longer.*
>
> *Cleverly entertaining and seriously inspirational.*
>
> *An excellent day - as usual. Exciting to see how many people are involved in the project.*
>
> *Such a positive group of teachers so enthusiastic about a specific project.*
>
> *Exciting, refreshing and rewarding.*
>
> *Fascinating, thought provoking and affirming.*
>
> *A most inspiring and motivating day … full of ideas I would like to put into practice in my classroom.*
>
> *Cluster workshops very motivating and encouraging.*
>
> *The quality of all the speakers at the conferences has been very high - inspirational in fact. Please can we continue?*

Headteachers who were asked to reflect on the contribution of the conferences to the project as a whole were equally enthusiastic:

> *Staff have really appreciated both the quality of the practical and academic inputs by invited speakers, and also the chance for honest discussions with colleagues - hearing about the 'highs and lows' and the exciting things that are happening for children in Norfolk.*

Points for Consideration

In what ways do conferences promote and sustain professional development?

How can we ensure that participants get the maximum benefit?

What are the key characteristics of a successful conference?

The action research model

From the outset, the project was conceived as an invitation to schools to conduct their own research in the broad area of 'brain-compatible' learning. The arguments for action research as a powerful strategy for promoting professional development have been well rehearsed and do not need repeating here (see bibliography for suggested reading). Fundamental to the project design was the belief that teachers needed to practise their own evaluative and reflective skills in order to develop them in children. The title 'Thinking Schools, Thinking Children' was carefully chosen to emphasise this point.

Implicit in this was the expectation that schools would select a focus area which, within the broad parameters set, would be based on their own interests and self-understanding. This made for much variety and diversity. It was undoubtedly a major strength of the project, as schools repeatedly reported. The freedom which teachers had to select their own focus enabled them to take immediate ownership of the project in their schools.

This approach was not, of course, without its difficulties. For example, it made high demands on the skills of the advisory team. In order to respond knowledgeably and authoritatively to schools' questions and concerns, advisers found themselves on a very steep learning curve: not for nothing was the project dubbed by advisers 'Thinking on your feet'!

It was assumed, correctly, that schools would need a fair amount of help in order to devise and implement their own school-wide action research project. While a few teachers had some experience of researching into their own practice, most had none (or claimed they had none). Therefore, at regular intervals during the course of the project, support was offered in a number of ways.

- Schools were offered a 'framework for self-evaluation' to help them generate school-wide discussion and help them identify areas which would be fruitful for further development.
- Guidance on action research methodology was sent to all schools at an early stage in the project: this included an outline example, adapted from a *Campaign for Learning*

case study.

- At two of the conferences (Spring 2001 and Spring 2002) there were presentations by university researchers on the principles and practice of action research.
- Schools were asked to complete an interim evaluation report to share at the November 2001 conference; they were presented and discussed at workshop sessions during the conference.
- Adviser visits to schools, and the cluster meeting run by the linked adviser, focused on action research methodology and offered further opportunities for questions and discussion.
- An outline framework, including key questions, was given to all schools as the basis for their final evaluation report; this was accompanied by a fictional example report, drawing on some of the material from project schools.

Schools reported that they found this structured support to be very helpful. It guided them through the early stages of selecting a focus and identifying research questions, and provided them with useful models which reassured them that they were 'doing it right'. Certainly the outcomes - both the quality of many of the final reports and the high proportion received - fully justified the attention given to this aspect of the project.

During the course of the project, there were opportunities for a number of teachers to visit Vienna, New Zealand or Malta. These study visits were organised by the British Council and funded by the DfES Teachers' International Professional Development Programme. All three focused on how schools in their respective countries were seeking to develop children's thinking skills. They were a rich source of ideas which, in many cases, made a significant impact on the projects of those schools represented.

A few teachers submitted their work for a Best Practice Research Scholarship. There was scope for more to have done so: this was an area of the project which was under-developed.

Points for Consideration

What are the benefits of action research in promoting professional growth?

What are the drawbacks?

What kind of support do teachers need?

How can this support be provided effectively?

Advisory support for schools

Schools participating in the project received regular support to help them implement their programme of action. This took a variety of forms:

- written communications, including a termly newsletter, guidance on implementing research and examples of 'work in progress';
- presentations and workshop discussions during the termly conferences;
- a cluster meeting led by an adviser, and two adviser visits to schools.

Regular correspondence was sent to all project schools. Invitations to conferences gave specific advice about how to prepare for workshop sessions in order to get maximum benefit from them. For example, an interim project evaluation form was sent to all schools before the Autumn 2001 conference. Key teachers were asked to complete these as the basis for a brief presentation of work in progress in their schools. The ensuing workshop sessions turned out to be one of the most exhilarating moments of the project. Teachers were bursting to share the work they were doing. The possibilities for discussion far exceeded the modest amount of time allocated to this activity in the conference programme.

Three newsletters were published, edited by the project steering group. Contributions were varied, being a mixture of news, opinion and work in progress. They provided another means of keeping in touch, and of celebrating the achievements of the project as a whole.

All schools received two adviser visits, approximately a year apart. A team of ten advisers was trained for this work, supporting around eight schools each (the team of advisers for the second visit was, inevitably, slightly different from the first).

The first adviser visit took place during the spring and summer terms 2001. In a letter to schools, they were asked to ensure that the visit was arranged after the following had occurred:

Staff had attended the initial training day with Trevor Hawes.

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The framework for self-evaluation had been completed following discussion by staff, and then sent to their named adviser.

The visit was to take place during the afternoon (1.00 to 4.30 pm approximately) and would include:

A discussion about the framework for self-evaluation with the headteacher and/or the key teacher.

&

A staff meeting to refine, if necessary, the identified area of focus and consider the next steps.

By the end of the visit, the following should have been accomplished:

Schools would have identified, or confirmed, an area of focus for their project. This would be expressed in the form of one or more research questions.

The headteacher and key teacher would be clear about the next steps they needed to take.

Staff were clear about the project outlines and had explored some ideas about how they might collect evidence.

In making their arrangements to visit, advisers were given a 'telephone checklist' to ensure that schools fully understood what the visit was designed to accomplish, and that schools were ready to receive maximum benefit from it.

The original conception was that schools, once they had chosen their area of focus, would be grouped in 'interest clusters' and that advisers would be attached to clusters to facilitate networking and the sharing of ideas. This proved to be a logistical impossibility, for a number of reasons. For example, linking some schools with others pursuing a similar line of enquiry would have involved them in travelling unreasonable distances; also as schools worked on their projects, many began to diversify and expand their horizons. For these schools, it became increasingly difficult to identify a precise focus: it was, therefore, no longer clear how they should be linked.

In the end the plan was abandoned and geographical clusters arranged which gave schools an opportunity to share their experience with other project schools in their locality. The workshop session to discuss interim evaluation reports, held at the autumn 2001 conference, were organised in these clusters, led (as far as possible) by their attached adviser. Follow-up cluster meetings were then arranged for the spring term 2002, held after school and hosted by one of the cluster schools. These gave headteachers and key teachers a further opportunity to share with others, raise any questions and begin to shape their final report. Teachers were asked to bring examples of evidence which could be discussed by their colleagues. Advisers were briefed to deal in particular with any questions concerning the collection and interpretation of evidence.

The second adviser visit took place in the summer term 2002. This was designed to support key teachers in compiling, or refining, their evaluation report. Most schools were well on the way to completion by that stage, though some needed help with interpreting evidence or with structuring their findings. Even those nearing completion found it valuable to discuss their drafts with someone external to the school. The visits provided just the right kind of reassurance, as well as acknowledgement of the exciting developments which had taken place.

Points for Consideration

What is the most effective way of supporting schools in implementing curriculum change?

What are the areas in which schools are most likely to need help?

How can networking be promoted and sustained most effectively?

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Choosing the focus

'Thinking skills' covers a vast range of different strategies and approaches. Schools were encouraged to establish their ownership of the project by making their own choices about which line of enquiry to follow. At the same time, there was an awareness of the dangers of schools getting lost in the morass of possibilities. As noted above, the first adviser visit to project schools aimed to support them in identifying an approach that was appropriate for their situation and stage of development.

All participating schools were asked to focus on a particular area for their action research project. For some this was easy, whereas for others the selection process was complex and lengthy. Most schools made use of the audit framework provided, and many found it useful in guiding their choice. A number selected on the basis of personal interest, perhaps stimulated by a conference presentation, staff reading or the recommendation of a colleague at another school. In a few cases, schools responded to a key issue identified in their Ofsted inspection.

> *The whole school staff, teachers and classroom assistants, attended the [initial] conference and were inspired … Back in school everyone was buzzing and eager to try everything … The main difficulty was narrowing down the general wave of inspiration and enthusiasm into one area for research.*
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> *At an initial staff meeting, we tried to narrow our research ideas to a sensibly sized area … This proved to be quite difficult, as most seemingly small ideas turned out to be but tips of enormous icebergs and every idea seemed to link inextricably into many others!*
>
> *All the teaching and support staff were enthralled by the ideas … They were particularly interested in the range of different learning styles and how this could affect children's learning. Two teaching staff who job share a reception class suddenly realised why they had a problem sharing a desk!*
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> *All the staff were interested in using music in the classroom as they thought there would be certain times during the day when it could be beneficial for the children. The newly appointed deputy was a music specialist and therefore it seemed natural to use her expertise to lead the staff and use this area as the focus for our research project.*
>
> *At the beginning of the project there were many aspects which excited us as a staff. We were already confident that circle time was an effective part of our daily classroom practice, and so philosophy seemed a natural progression: encouraging children to discuss issues with no 'right' or 'wrong' answers; to put forward their own point of view and listen politely to others; and, most importantly of all, to think creatively about different issues which they may never have been confronted with.*

There was a considerable range of research questions, for example:

Range of research questions	Do regular periods of brain gym improve children's ability to focus in whole class sessions? Do activities which develop children's imagination also extend their expressive language? How can we develop the children's sense of ownership in their school community? Are we meeting the learning needs of each child through catering for their different learning styles? Does philosophical enquiry help children to improve their speaking and listening skills? How can teachers help children to improve their long-term memory? Are the skills learned during philosophy lessons transferable? Is there evidence of improved independent thinking in other areas of the curriculum and school life?

Many schools reported that, having begun their research by focusing on a particular area, one thing soon led to another and by the time they came to write their final report, they had often diversified so much it was difficult to keep track of all the strands.

> *Our original chosen area of focus was Circle Time … We wanted to provide a forum for our pupils where they felt secure and safe, able to express themselves as well as promoting positive attitudes to one another … We could not have foreseen the impact that Circle Time would have within the school, or indeed the spin off that it would create … We are now beginning to explore a range of 'thinking strategies'. Brain Gym takes place on a regular basis, we rewrote our behaviour policy and we are in the early stages of setting up a School Council.*
>
> *Our project developed gradually over the course of the year. Inevitably new strategies and skills have been introduced in addition to the ones being researched. For instance, some teachers are now using Brain Gym and others are using Mind Mapping … [Some] consciously plan for different learning styles in their lessons … When listening to children and teachers around the school it is interesting to note that 'thinking' has become part of people's active rather than passive vocabulary.*
>
> *The project has grown and developed in ways we couldn't have imagined. By addressing learning styles we feel we have really put children back at the centre of education. The project has spilled over into many other areas and become intertwined with other projects, so much so that it is now difficult to prise them apart. We now plan quality thinking and talking time into our lessons. We have developed a structured Circle Time plan throughout the school. The children's thoughts, views and ideas are now being listened to as part of a School Council. Following this, playtimes and play areas have been redesigned. A structured Golden Time system has been set up throughout the school. Most importantly, this has all been achieved by including everyone within the school community, creating a positive team atmosphere.*

A few schools regretted their original choice of research area, finding that they had not provided themselves with sufficient structure to guide their project:

> *Our chosen area of focus was [to] match teaching to children's learning styles. We basically agreed to look at our lessons and how we were delivering the curriculum to the children. With hindsight and on reflection this was a bit too woolly and not specific enough. Consequently, our focus drifted slightly and changed direction to Circle Time and school councils as well as teaching/ learning styles.*

Others were firmly resolute and resisted the temptation of being diverted:

> *We were determined from the start to remain as focused as possible on the aim of setting up a school council. There were many new ideas being discussed at the Thinking Skills Conferences over the project period. We felt that it was important that we did not attempt to try everything.*

Early concerns about the disparate nature of the project turned out to be one of its major strengths. Each school was able to make its own selection of focus area and develop it in a way that was appropriate to its own situation. For the vast majority of schools the support given to them by the regular conferences, written guidance and advisory visits enabled them to find their own pathway to success.

Philosophy for children

The origins of the 'philosophy for children' movement can be traced to Matthew Lipman's seminal programme in the USA in the 1970s. More recent advocates include Robert Fisher and Karin Murris, both of whom gave presentations at the Thinking Conferences. Karin Murris had visited Norfolk several times previously, and a number of teachers from the project schools had attended her courses and were making use of her ideas and resource materials. In a few schools, philosophy lessons were an established part of the curriculum.

The main purpose of a philosophy lesson is to explore ideas collectively through a disciplined discussion which develops understanding (the 'community of enquiry'). It makes use of the 'Socratic method', that is, everything is open to question but each contribution must seek to build on previous ideas. An initial stimulus, often a story, is used as a trigger to thinking. Children may be invited to generate questions about what they find interesting or puzzling, with one of these being selected as the starting point for discussion. The teacher's role is crucially different from that in other lessons, seeking to guide the form of the discussion but not its content. Philosophical rigour is developed by encouraging children to give reasons for what they say, connect their comments with previous ideas, and challenge faulty reasoning.

Six schools focused on developing philosophical enquiry, though individual teachers in many other schools made extensive use of this context for developing thinking. The starting point for discussion was generally a story, though teachers also used questions such as, "If you had a different name would you be a different person?" or "Could children run the school?"

One teacher reflected that the development of philosophical discussions required considerable reserves of patience and trust. She likened them, in the early stages, to a visit to the dentist:

> *[It was] painful, seemed to go on for ever and felt like you were having your teeth pulled, but now they are much more at ease with the process …*

Another teacher similarly commented on the challenges of managing a philosophical discussion:

> *Leading a Community of Enquiry is a complex and very demanding activity and one I feel that I am, after nearly a year of study and practice, only just beginning to feel competent with.*

Persistence inevitably paid off, however, and philosophy discussions have in many schools become one of the children's favourite activities. Fun, but also rigorous - "It makes my head explode with concentration," was the verdict of Harrison, aged 7. A first school commented: "A 'Yesss' goes up when the chairs are put in a circle for thinking story time". In another school Alicia, aged 7, gave this resounding endorsement:

> *I like … philosophy because it means I can give my own thoughts and there isn't always a right answer. I like that there isn't a right answer and that I can listen to what other people think … It is good to hear their answers to my questions because they think differently to me and sometimes make me think differently and that is interesting for my brain.*

Schools which focused on developing philosophical enquiry made very similar observations about the impact on children's learning:

- ability to express themselves more clearly;
- greater ability to raise their own questions;
- ability to build on previous arguments;
- more open and creative thinking;
- greater tolerance of viewpoints different from their own;
- ability to support their opinion with thoughtful reasoning;
- willingness to change their mind.

Some schools expressed particular pleasure that the skills learned and practised in philosophy lessons were transferred to other situations. In one first school, teachers concluded that children's responses seemed to be deeper and more open as a direct result of their exposure to philosophical thinking. For example Alex, a Yr 2 child, asked the question, "Do heavier vehicles go further and does the size of the wheels make a difference?" in a science lesson.

One primary school attached to its report a remarkable transcript of contributions to a philosophical discussion in a class of Yr R and Yr 1 children. The stimulus was the story *The Lion and the Rat* and the children had chosen to discuss Evie's question, "Did the rat use strength or skill?" As the discussion proceeded, Barley noticed that the younger children in the class were not participating, and suggested it was because they do not understand the question. Evie allowed the teacher to rephrase the question as, "Is it better to be strong or clever?" whereupon the discussion really took off. Children build their ideas, talking directly to one another and giving reasons for the opinions they hold. At the end Barley offered this comprehensive conclusion:

> *It's much better to be clever. Mind you, everyone is clever in their own way. We all know the same number of things but I know different things to the things that you know. I think it is much better to be clever because you can show other people how to do things and that is a lovely thing to do. I could teach you all to twirl firesticks.*

Evie commented: "Wow! That's really clever!" One can only agree.

Learning styles

The schools which opted to work on considering different learning styles formed the biggest group in the project - this was not surprising. Trevor Hawes' original presentation had dealt with this area in some detail, and his account had resonated deeply with teachers' experiences and observations. Many of the presentations at subsequent conferences revisited this theme, providing a rich source of ideas for reflection and action. Even those schools which did not select this area for their main focus were heavily influenced by the many discussions around this issue, and many referred to this in their final report.

Gardner's theory of multiple intelligences has already been referred to (p 3). From acceptance of this concept, it is only a short step to recognising that everybody learns in different ways and has particular individual preferences. There are a number of models for classifying learning styles. The one which found greatest favour with the project schools suggests that people can be divided into visual learners (those who like to see pictures of

diagrams), auditory learners (those who like to listen) and kinaesthetic learners (those who like to use the sense of touch or movement). The model is not meant to imply that people learn in only one way - it is richer and more subtle than that, but it does provide a powerful tool for helping to analyse the very different approaches to learning which everybody has.

Equally fascinating was the related knowledge about how the brain is structured, how it evolved and how its component parts operate. Teachers learned about the three areas of the brain and the functions and behaviours that each control. They learned about how the two hemispheres specialise in different areas of learning and operate in different ways. They heard a whole new vocabulary of neurons, synapses and dendrites. They considered what the implications of new neuroscientific knowledge for their daily classroom practice might be.

For many teachers, this opened up a completely new territory. There was much rethinking of how to present learning, and a great deal of reflection and discussion about issues such as gender differences, concentration spans, relevance and motivation. The 'language of learning styles' was quickly absorbed into many of the project schools. At the conferences, teachers talked about 'painting the big picture', 'connecting the learning' or 'VAKing lessons'. A number of schools amended their curriculum planning systems to ensure that teachers paid attention to catering for different learning styles. Others reconsidered their timetables to give greater variety during the course of a school day.

Several schools noted that there had been a particular effect on literacy and numeracy teaching. This included a re-evaluation of guidance materials from the literacy and numeracy strategies on how to vary teaching and learning approaches:

> *This has given a new perspective in my teaching and I am now implementing many different teaching styles into the classroom. For example, having many more practical activities with model making and art based subjects linked with the core subjects.*
>
> *We are now more aware of the importance of differing learning styles and now aim to incorporate strategies into at least some of our planning … Displays are now used more extensively to provide aide-memoires for vocabulary, key teaching points, targets and learning objectives for visual learners, as well as to celebrate achievement. One teacher commented, "It made me think about display and why we do it. Hopefully, displays are much more about learning than they used to be."*
>
> (Primary headteacher)

I have focused on using a greater variety of styles, especially during whole class literacy and numeracy. I have tried to vary styles to get a balance of aural, visual, kinaesthetic etc, ways of presenting a lesson to a whole class. We have lots of children's participation - clapping, clicking and singing times tables; competitions and quizzes; paired or group heads together; individual whiteboards to record ideas and answers; role play etc. I also try to present information on the whiteboard using a range of formats: pictures, writing, diagrams, tables, mind maps etc, and try not to over-emphasise my own preferred learning style.
(Yr 3 teacher in a First School)

A number of schools reported that sharing with children information about learning styles and brain stucture was of particular value. Children showed the same fascination with how their brains work as their teachers. They too were keen to understand more about their own thinking and learning strategies - why some things worked for them and others didn't. Many schools encouraged even the youngest children to reflect on 'what goes on in their head' when they think. Teachers discussed with children how their thinking could be improved, and taught them strategies for doing so. In some schools this discussion was carried on at quite a sophisticated level, as children gradually became familiar with talking about their thought processes. One primary school noted with satisfaction that "children are more aware of their thinking and have language to describe it".

Schools also created opportunities for children to explore the ways they best liked to learn. Daryl, for example, in response to an invitation to complete a series of 'think bubbles', wrote:

> *I learn best by playing games … I remember by going back to the place I learnt it … My favourite time to learn is in the morning … I learn better at home because there is no-one to disturb me.*

One first school asked its older pupils to imagine they were teaching a numeracy lesson, with a defined objective, to younger children. The drawings which ensued were revelatory:

[Susan's] classroom was a huge kinaesthetic and visual experience - pattern making games and pictures created with a variety of materials; even the teacher had a patterned dress to emphasise the learning experience! … Reflecting on her own work, Susan has often said that she prefers a kinaesthetic/visual experience … The visual presentation of her work is always immaculate.

John's classroom is different … Posters on the wall reinforce the learning objective; children use building blocks to work out the words 'under' and 'above'; children on other tables work using sticky paper.

It is difficult to generalise from the huge range of comments which schools made as a result of their work in this very complex area. However, the following effects on children's learning were noted by several:

- attitudes to learning have improved, and motivation is higher; children are more confident and involved in their learning;
- children are "more self-directed, responsible and evaluative";
- children understand, and readily use, a wide range of strategies to structure their thinking throughout the curriculum; they acknowledge the usefulness of these strategies, and some children are beginning to make use of them without prompting.

A few schools selected a specific focus on particular strategies to support children's learning. For example, three investigated how children could be taught to improve their long-term memory; three more explored drama as a context for deepening children's emotional involvement, empathy and problem solving skills.

The schools which explicitly taught strategies to improve children's memory reported notable benefits. One teacher of Yr 5 and Yr 6 pupils explored how the teaching of concept mapping could assist children in organising their thinking, presenting their ideas and recalling information:

> *The children's recall was significantly greater than I have found when asking them to remember verbally and in writing what they remember they have covered in a topic. Instead of one or two things written down, many had remembered 20+. Many children felt very positive about the method. "I could see it in my head" and "one thought led to another" were typical comments and many said they would use it again.*

In another (first) school, teachers experimented with a variety of strategies, including mnemonics, inventing actions to accompany words, and matching the sequence of events to parts of a clock. Members of staff pronounced the effect "quite incredible" - "such a powerful tool - one that I shall use again". Children added their own voice of approval:

We remember things by the clock strategy and the mnemonic strategy. It was eight months ago we did the clock strategy and we can still remember the bonfire lines. I will use the strategies when I am older. It will help a lot!

The schools (all first schools) which sought to develop thinking through drama likewise reported success. One recorded that "in Yrs 2 and 3 drama has become the normal way of stimulating creative writing and the quality of work has certainly improved since we adopted these methods". Another noted that children were more outgoing, more analytical and "far more confident when speaking in public". In the third, an elaborate role play situation was devised as a context for children to practise and refine their thinking skills:

… The standard of the children's work improved and they were able to explain what they were doing and why they were doing it with much more confidence and understanding …The children's own evaluations at the end of the project expressed a high level of enjoyment and engagement.

Another notable featire of many schools' projects, and the main focus for three of them, was the development of 'assessment for learning' techniques. This work, inspired by the 'Black Box' pamphlets produced by Paul Black and Dylan Wiliam, and by the series of books (and related training sessions) by Shirley Clarke, was already underway in many Norfolk schools. It was given fresh impetus, however, by the clear links to be drawn with the development of children as reflective, thinking participants in their own learning.

Building on Dylan Wiliam's axiom that "Everyday assessment is the one thing that has been proven to raise educational standards the world over", teachers set about the task of encouraging children to gain insights into their own learning. They inaugurated and refined a range of devices. They shared learning intentions with children at the beginning of every lesson; they helped them to recognise how they could successfully meet them; they provided feedback specifically related to the lessons objectives; they gave children opportunities to identify and discuss their learning needs, and they involved them in setting personal targets and judging when they had met them. Classrooms were enlivened by posters displaying learning intentions and success criteria, by target cards and 'traffic lights' to signal children's level of understanding.

Teachers found that children's initiation into 'the language of learning' was a powerful motivator as well as an excellent source of feedback. One said "it makes you wonder how we ever did without it".

The brain needs more than mental nourishment, however. There is evidence to suggest that the regular provision of water is needed to ensure that the brain is sufficiently hydrated to work efficiently, in particular to aid concentration. A 'Water is cool in school' campaign to encourage this was initiated by the Norfolk Health Authority in the summer of 2002. Many schools in the county followed the advice, but there is some evidence to suggest that many of the project schools pursued the issue with particular vigour and enthusiasm. No doubt the theoretical background they had played a part in this. Also, a high proportion of evaluation reports refer to the perceived benefits of allowing children constant access to drinking water, and record the appreciative comments of children in response to this:

> *All children have water bottles and are taught how and why they should use them … It has been very successful and a 'seamless' addition to the children's independence. They are able to take a drink whenever they feel their brain 'switching off' during learning and are responsible for keeping themselves rehydrated. The children are used to this and do not misuse it.*
>
> *I like having water in the class, it helps my brain and helps me think. Before I used to get thirsty and I couldn't concentrate as well.*

Emotional intelligence

The concept of 'emotional intelligence' has been briefly outlined above (p 4). A recurring theme of conference presentations and subsequent discussions was the reminder that emotional intelligence underpins all learning in the classroom. Primary schools have long prided themselves on their concern to provide caring, secure learning environments where children can flourish. What the project did for many schools was to place this emphasis in a fresh context, enabling teachers to reconceptualise and re-examine the work they were doing. Few schools were untouched by the reverberations of this, demonstrated by constant references in their evaluation reports.

Many schools found Circle Time to be a particularly useful way of developing children's emotional literacy, providing a rich context for developing children's thinking skills:

Circle Time	seeks to develop children's identity, sense of belonging and self-esteem; extends vital learning attributes, such as attentiveness and concentration; engenders awareness of the self as part of a group and the individual's obligations to the community; encourages reflectiveness and the articulation of thinking; develops empathy, co-operation and other inter-personal skills; provides opportunities for different styles of learning; gives extensive opportunities for problem solving and decision making.

During the lifetime of the project, the 'Healthy Norfolk Schools' scheme was actively promoting Circle Time as a key strategy for the development of children's social and emotional well-being. This was just another example of how convergent streams met. Many schools had taken advantage of the training programme associated with the 'Healthy Norfolk' award, and sought to make connections and show economy of effort by linking this work with their involvement in the 'Thinking Schools, Thinking Children' project. As an entry point to the thinking skills field, it had particular appeal to many urban first schools

which served areas of high socio-economic deprivation. Eight schools followed this route, though in all cases the establishment of Circle Time led to something else, for example the formation of a school council.

Schools generally reported that Circle Time had promoted a definite shift in children's emotional literacy:

> *A regular feature of Circle Time in every class is the use of games and activities that promote self-esteem. Many children have visibly grown in confidence and are much more able to accept and give out praise … We have also noticed an improvement in behaviour … The children like to use Circle Time to discuss difficult issues such as bullying and Circle Time has given the children the skills to discuss and solve such issues.*
>
> *The children get lots of positive feedback from each other. It has given our class a sense of being a team.*
>
> *As children felt emotionally safe some were able to talk about the misery that bullying and name calling causes them. Children are encouraged to think about solutions and problem solving and feel more confident about being able to change situations. It gives them more responsibility and control over their lives.*
>
> *Children have learnt about codes of conduct within a community, about respect for the feelings and opinions of another, about taking turns, about things that are important and, perhaps most importantly, about the power of their own thinking skills. It is the excitement of this realisation which seems to have inspired even children who say very little to extend their vocabulary and overcome their shyness in order to tell others their thoughts or ask their questions.*
>
> *Circle Time gives the children a voice, a language, a time, a space to express worries, problems … and contribute to solutions.*
>
> *Not all of my class like Circle Time but they do all participate now. Their ideas … are so perceptive it makes me wonder why we haven't done this kind of thing before!*

One school noted that the conventions and habits of Circle Time were being increasingly used during the course of the school day; for example, children were more likely to offer one another compliments, boys and girls worked and played together more readily, and children felt secure in voicing their opinions in all kinds of contexts. Another commented on the improvement in positive thinking: "We hear less often the words 'I can't do it'."

As well as the above benefits, many schools had selected Circle Time as their main area of focus in order to improve children's speaking and listening skills. The evaluation reports offer abundant evidence that their aim had been successful:

Children seem to have improved speaking and listening skills. They are more able to address one another, ask and answer questions, be able to refer to one another's ideas, give clearer explanations and show more attentive listening.

Our evidence shows that children across the age range have become more reasoned and articulate speakers and more supportive and reflective listeners … throughout the curriculum.

A few schools looked at how children's emotional literacy could be enhanced by planned improvements in the quality of relationships or the learning environment. One first school, for example, investigated the effects of developing more positive language throughout the school. Teachers reported that "I am now more conscious of my responses to children" and "I feel less stressed because I am focusing on the positive". Others commented:

The children have become self-motivated. They evaluate each other's work constructively and are not afraid to have a go and get it wrong.

Children are now more autonomous and willing to identify their own needs and take responsibility for their own positive environment.

Another (primary) school wanted, as one of its key aims, "to make the children feel more comfortable in their learning environment". Much pupil discussion and subsequent action ensued, involving carpeting, introducing soft furnishings and plants, changing colour schemes and even tying the legs of tables together to reduce noise. The school reported an increased sense of belonging, and heightened motivation and commitment from the children.

A number of schools experimented with music as an aid to learning, and one first school chose it as its focus. Over a period of a year or so it carefully monitored the effects of different styles of music in different situations. It used feedback from children and teachers to refine its selection of pieces and their appropriateness for different situations. It reports the following conclusions, among others, from its study:

- there is a general sense of well-being when music is playing; it has a particularly calming influence after lunchtime;
- music helps to create the right atmosphere if well chosen "but inappropriate music can have a catastrophic effect";
- music appears to improve concentration and makes times such as tidying up less stressful and more fun;
- most children enjoy the music and feel that it helps them to concentrate, relax, settle down and work faster.

Among the many pupil endorsements collected by the school, the following are notable:

I really do like the music on - my brain goes into the music and … it floats you off to music land. My hand is still writing.

My mum thinks it's brilliant because the music helps me tidy up my room.

Brain gym

The rationale for brain gym has been extensively developed by Paul and Gail Dennison (see bibliography). It draws on recent knowledge about how the brain works and seeks to

develop 'whole-brain learning' by promoting better integration of left and right hemispheres of the brain. Most people develop the use of one side of the brain more than the other. In order to maximise their learning, children need to use their whole brain to the full. Brain gym activities are designed to help this process. They are helpful to all, but particularly to those with dyspraxic tendencies and some learning difficulties.

Five schools selected brain gym as their primary focus, though many more developed an interest in this area during the course of the project.

There was no presentation specifically on the subject of brain gym at any of the conferences. However, a number of schools organised their own training, making use of the expertise of local consultants, advisers or colleagues from other schools. Many also purchased literature on the subject from the conference bookstall.

For some schools, the use of brain gym became part of school policy. Teachers were trained in its techniques and practice was regular and systematic. Children were familiar with the routines and looked forward to them. Brain gym exercises were used not just on a class basis but also individually. In a few schools, children made independent use of brain gym to 'get the brain moving'.

These schools were confident in noting the benefits of brain gym exercises. One teacher of Yr 3 children, for example, commented that:

> *Brain gym is important for creating breaks between lessons. It is clear to see that after about ten minutes of working quietly on task the children begin to lose concentration and the noise level increases. By carrying out a short brain gym activity it is possible to switch back and focus once again on the task in hand.*

This view was endorsed by the children - two Yr 3 pupils commented:

> *We do a lot of brain gym in our class; it helps me to concentrate and when I get fidgety I go to the brain gym wall or sit at my chair and do some exercises and then I can think again and concentrate on my work …*
>
> *Brain gym helps me think and to learn new things. I especially like the crossover linking my left and right brain, it helps me learn a lot easier.*

In other schools the introduction of brain gym was more haphazard, relying on the interest and commitment of individual teachers. This often spread through the school, as staff extolled its virtues to their colleagues. For example, one school reported that "the majority of staff are trying brain gym … as a regular part of classroom practice" and identified future action to enable it to become embedded in the school culture.

Not all schools reported success with the introduction of brain gym exercises. In one primary school, it was felt to be beneficial to the younger children, but "the attitude of some of the children in the class meant that it was not successful and was not tried again. The teacher felt that more organisation, introduction and time was needed." A first school also emphasised the need for careful preparation, as well as personal expertise on the part of the teacher:

> *After the initial four week trial period … the staff were unsure about the usefulness of Brain Gym. Some felt … that it could cause over-excitement that was disruptive rather than conducive to children's learning … It was also agreed that as a team we did not know enough about Brain Gym to implement it effectively. We needed to find out more about the different types.*
>
> *To further our knowledge of Brain Gym we booked a half-day's INSET … This was an eye-opener as we realised we had been approaching (it) in too hurried and imprecise a manner. No wonder we found children were getting over-excited! We learned a more careful, controlled and calm style … Newly inspired, we decided to trial this until the end of the summer term.*

At the end of this period, teachers were much more positive, reporting that "children have generally responded very well":

> *The children are much calmer and focused on their learning after brain gym … The children have often stated they find brain gym useful and are quick to remind any teacher who forgets the session.*

This school noted how most children with special needs found the exercises difficult and needed considerable extra support to perform them successfully. It felt that more time was needed to judge whether any improvements in their learning could be attributed to the programme, though teachers had sufficient faith to want to continue.

Overall, however, schools which selected brain gym as their main focus reported the following benefits for children's learning:

- improved concentration and attentiveness;
- fewer incidents of low level disruption;
- increased enjoyment of lessons due to greater variety;
- for some children, better co-ordination and hand/eye control.

School councils

Six schools chose the setting up of a school council as a main project focus, though many other schools started one as a spin-off from their other activities. This was helped by a programme of training in Norfolk sponsored by School Councils UK, which was attended by many teachers (and pupils) from the project schools. Some of these schools included an evaluation of their school councils in their final reports.

In the *Primary School Councils Toolkit*, published by School Councils UK, the following benefits are suggested:

Benefits	children learn to listen to others and to recognise themselves as worthwhile individuals with a right to be heard; children learn self-confidence, social skills and morally responsible behaviour towards each other and towards their teachers and helpers; children become partners in their own education, making a positive contribution to the school environment and ethos; school councils enhance the influence of positive peer leadership; contributing to their class and school community develops self-esteem; every child learns from personal experience how to contribute to society as a whole and what it means to be an active citizen.

An important aspect of the approach advocated by School Councils UK is the setting up of class councils, or class meetings, which involve all children in debating and carrying forward issues to the whole school council. In this way all children benefit from participating in discussion and democratic decision making, not just the elected class representatives. The training therefore emphasises the need to ensure that all children are able to contribute fully, and that representatives are equipped to fulfil their roles of representing the views of their class.

All schools agreed that their school councils were a definite asset, though two felt that more time for consolidation was needed before clear evidence of all attributes claimed by School Councils UK could be adduced. One first school felt that the concentrated work done on introducing Circle Time had provided children with a firm grounding in expressing their viewpoints, and had helped to ensure its success. Teachers reported that children looked forward to the meetings and thought that it was a good way of making sure that everyone in school had a chance to get their ideas listened to. In the words of one Yr 3 pupil:

> *I think School Council is good because we can all speak about things and you listen to us.*

Another first school followed a similar route, building on the experience of Circle Time to introduce the concept of class and school councils. It particularly noted the following outcomes:

Outcomes	children could run their own class council sessions with minimal adult intervention; most children developed a sense that they have a place where they can discuss their concerns and are able to influence things which happen in their school; children are more confident and have better negotiating skills - this is particularly so of children who have served as school council representatives.

A first school with a long tradition of teaching thinking skills noted that this had provided a good grounding for "reflective and reasoned debate" in class and school council meetings:

> *There is now an expectation on the part of most of the children that they will be consulted and involved in relevant aspects of school life. We see this s a very positive benefit of our work and a 'life skill' for the children. They can see that their ideas and thoughts are taken into account and that action follows - no 'lip service'.*

A middle school noted that its school council had matured over the two year period into an effective and efficient group. It was widely seen as a body for making the school a better place, by helping people "with ideas and problems that they have" and "giving us a say in what to do about helping the school". There was particular satisfaction in the fact that "we get results".

A primary school reported similar sentiments. Pupils gained significantly in their sense of responsibility, for example negotiating with the headteacher to obtain spending money for the wild life area, running competitions and using the school newsletter to voice their ideas. Pupils were very clear about its value:

> *Usually the headteacher makes the decisions - now School Council is here we can help to make choices.*
>
> *School Council helps the environment … Pupils know the rest of the children's likes and dislikes.*
>
> *When you ask School Council, it works!*
>
> *The school belongs to the children too.*

Summary

Because the project was so wide-ranging, it is difficult to generalise the overall benefits for teachers and children. However it is possible to list the following with confidence:

Benefits to teachers	greater insight into how children learn; a wider repertoire of teaching and learning approaches; a better understanding of how to use display to support learning; increased opportunities for professional discussion; recognition of the power of talking with children about their learning; improvements in enjoyment, concentration and task orientation in lessons.
Benefits to children	better motivation and increased confidence; improved speaking and listening skills; access to a wider range of learning styles; greater sense of self-direction and self-determination; heightened responsibility for their own learning; a more analytical, questioning approach to their work; a personal 'kit-bag' of useful learning strategies.

✦✦✦✦✦

Collecting the evidence

In the early stages of the project, there were significant worries about the action research process - in particular what might count as evidence, whether it would be considered sufficiently 'robust' and whether its collection and analysis would take too much time. Considerable effort was put into ensuring that headteachers and key teachers felt sufficiently confident to lead this work in their schools, taking the form of written guidance, presentations at conferences, and workshops. The two adviser visits to schools also played a crucial part in this process. In embarking on the final evaluation report, however, most key teachers found that the prospect was more worrying than the reality. By the time of the second visit they were generally well on the way to completion and mostly wanted reassurance rather than guidance. In most schools, there was a strong emphasis on gathering teachers' perceptions of how things had changed: the ways in which their understanding and practice had developed, and the impact which this had had on their classes and on individual children. The data was collected in a number of ways:

Data collection	Class teachers were asked to report giving details of their application of agreed strategies and the impact this had on children's learning. Staff (often teaching assistants as well as teachers) were asked to respond to a structured questionnaire. Teacher 'evaluation sheets' were designed to aid collection of specific data. Project evaluation discussions were held during staff meetings or professional development days, either on a regular basis or at the end of the project, in order to share good practice and reflect on progress. Teachers were encouraged to keep a learning journal throughout the project (a recommended approach, though not widely used). The key teacher kept a journal on behalf of all staff, recording the outcomes of discussions and other relevant data. Teachers evaluated individual lessons, including annotated class sheets of children's questions, observational notes on participation and interest level The key teacher or headteacher observed lessons related to the project focus - in some schools, this generated data for further reflection, eg observation schedules, comments against agreed criteria, transcripts of children's talk. The project focus was selected as a performance management target. While information relating to this was confidential, many teachers were willing to share this as part of the school-wide debate. There was much informal discussion about work in progress ("talk amongst the teaching staff was the most valuable aspect of our monitoring").

Most schools also recognised the powerful nature of the evidence which children themselves can provide. In some schools this was collected in a highly systematic way; in other schools it was more impressionistic (though not necessarily any less telling). Data collection took many forms - the following is by no means an exhaustive list:

Children's evidence	Samples of work - for example, concept maps, responses to 'thinking' questions, children's own questions generated during philosophy sessions. Photographs showing participation in 'thinking' activities, eg philosophy discussions, brain gym, circle time. In a few schools, children were invited to add their comments alongside the photographs. A 'quotations log' or 'magic moments book', collecting together children's perceptive, insightful or unexpected responses. (Some schools made very effective use of children's quotations in displays, or included them in newsletters to parents or reports to governors.) Individual children were tracked to assess their thinking development. Children's own reflections and records of discussions, for example, weekly diaries, school council notes and minutes. Attitude surveys/questionnaires to gather information from the whole class. Structured interviews with a sample of children to gather their perceptions of the value of particular approaches or activities.

A few schools surveyed parents' views, or invited governors or other visitors to observe and comment on the work they were doing. This provided a useful perspective, as illustrated by the following comment from a governor:

> *I was very surprised by the profound thought expressed by children who are so young. They were all listening, all involved and some of the children had some amazing and original ideas. It was a complete revelation to me.*

A few schools used audiotape to record group or class discussions and transcriptions of these were carefully analysed. Despite the intentions of a few schools at the beginning of the project there was little use of video. However, a project video (see bibliography) has been compiled to illustrate key themes of the project. It provides a valuable additional dimension to the written evidence.

Measuring the impact

All schools which completed evaluation reports were very positive about the project and commented favourably on its benefits. Many were highly enthusiastic. A large number of schools reported a greatly increased level of professional debate among staff. Many also commented explicitly on their 'ownership' of the project and the increased sense of pride and professionalism which resulted.

> *Children are back at the centre of education … It is probably for this reason alone that the project has been received and responded to so positively and enthusiastically at our school … After so many new initiatives have been introduced it has been refreshing to put the individual child back at the centre, as the most important thing we wish to develop.*

[The project] has been beneficial to the self-esteem and professional pride of the staff, as they realised that their existing practice already contained many of the recommended approaches to teaching in a memory-friendly way. There was pleasure and enjoyment in honing good practice and watching the effects.

The project has given us all a renewed enthusiasm for teaching. Lively pedagogical discussions involving most teachers and support staff are now a regular feature of the staff room and people feel that they have been given the opportunity to actively investigate ideas rather than carry out instructions that they only half understand. For the first time for many years we feel that our professionalism is acknowledged.

Just occasionally you have INSET which profoundly changes the way you teach. The Thinking Skills Project has been like that for us.

A few schools noted a measurable impact on children's achievements in statistical terms. For example, tracking information and test results were analysed to show improvements, even in the short term, on writing standards.

Most schools, however, were satisfied that the qualitative data which they had collected was just as telling, indeed more so. It is difficult not to be impressed by the weight of the evidence which had been gathered, discussed and analysed. Most schools included examples of this appended to their reports. This gives a clear insight into just how thoroughly and seriously their research work had been undertaken.

Some schools were cautious in making grand claims about the achievements of the project. The majority, however, were very confident in reporting improvements in children's learning:

"Assessment of the impact … on children's learning is ongoing. This project has been even more wide-ranging than we originally envisaged and has had a huge influence on the school … The impact on learning includes:

- *Children are willing to contribute to debate and ask thoughtful questions.*
- *All age groups … know and can follow the rules of debate.*
- *Children are more aware of their thinking and have language to describe it.*
- *Children are developing skills such as model mapping to show and develop their learning.*
- *Ability to debate and make decisions has pervaded other areas of the curriculum."*

"We believe that we have sufficient evidence to conclude that the way in which children's thinking is moved forward when they have been taught to discuss in philosophy, lived it in drama and felt it in Circle Time is different and perhaps deeper. This is why we have concluded that teaching children not only to think out loud but through structured sessions improves the way in which they can explore their own learning … The importance of giving children a variety of ways to voice their thinking and learning is crucial to their being able to become flexible learners and problem solvers."

"The huge impact that the Thinking Skills project has had on our school is evident in the way it has permeated all aspects of school life. As you walk round our school you may see:

- *Children doing brain gym as a warm up before literacy.*
- *Children doing relaxation exercises.*
- *Water bottles on every table.*

- *Philosophical questions pinned up in classrooms.*
- *Children invigorated by upbeat music.*
- *Teachers using a diverse range of teaching styles and stimuli.*
- *Children in circles engaged in lively debate, quiet reflection or co-operative games.*
- *Drama being used to explore a history project.*
- *A whole-school display of 'What if …?' questions.*
- *Mind maps as introductions to topic work.*
- *School Council minutes on every notice board."*

"The new approaches which we have put in place have set high expectations of the children and they in turn are responding by raising their achievements. There is clear evidence to show that the children are beginning to show an ability to:

- *Identify areas for care and concern.*
- *Define and understand problems.*
- *Pose and present methods for working towards solving and resolving problems.*
- *Value and judge each others' ideas.*
- *Have confidence in their judgements.*
- *Work within a democratic framework."*

"One clear result of the project has been a far greater awareness from the children about the way we can use our memories as a tool. There was a general perception at the beginning of the project that remembering just happened to you (or not!), particularly in KS1. When these young children were asked how they remembered things at the beginning of the project, a common response was "I ask my mum to tell me". Across the whole school there is now a better understanding of taking responsibility for your own 'remembering'. The feeling of empowerment was age appropriate, from choosing your own movement link in KS1, through to evaluating whether mnemonics or mind-mapping is your preferred strategy in KS2."

The team of advisers who supported schools during the project were also clear about its benefits, expressing this in terms of its impact on teacher confidence:

Teachers feel more professional again.

Teachers are more willing to take risks.

Many drew attention to the quality of professional discourse in project schools.

It has hugely enhanced the dialogue about teaching and learning in staffrooms. Teachers have developed a more sophisticated language.

It has made teachers more articulate about effective teaching and learning.

Taking part in an action research project has enhanced teachers' ability to think and talk about children's learning.

Some went on to suggest that there are untapped resources here:

We may have underestimated schools in terms of what they are willing or able to do - [it has] raised our expectations of what schools can achieve.

It has raised my expectations about teachers' willingness and ability to take on new ideas.

Project schools are now willing to take on more challenging ideas.

There were, for some, clear messages here about the dynamics of implementing change.

When schools volunteer to become part of a project and can take responsibility for their work they respond very positively.

It has underlined the headteacher's role as the leader of teaching and learning.

Though there had been few opportunities during the project to observe teachers in the classroom, advisers were nevertheless clear from their school visits that the link with improved learning opportunities for children could confidently be drawn.

It has given teachers a renewed enthusiasm to be innovative and creative.

Teachers are much more creative - children have been given more stimulating and exciting activities to do.

Teachers have developed a much wider range of strategies to select from.

Some were very conscious of how the project had 'raised the profile' of the Local Education Authority.

The fact that we have been working alongside colleagues in school seems to have improved our credibility.

It has had a positive effect on the way schools view the LEA.

And, not least, there were a number of comments reflecting their own learning.

It has made me more aware of adults as learners.

[I have] learned a lot from looking outside our own context - what is happening outside the county and internationally.

It has rekindled my own excitement about teaching and learning - with a sense of working at the cutting edge.

It would be hard to disagree with these verdicts - the cumulative weight of so much positive comment is overwhelming. The very high proportion of evaluation reports completed is itself evidence of the level of enthusiasm and commitment which the project generated. Not one strikes a discordant note.

Many schools remain confident that the changes in practice brought about by the project are far-reaching and permanent. They are able to say this because they feel that the learning culture of the school has fundamentally changed. There are lessons here for policy making at both local and national levels.

The next steps

Schools in the project have been keen to continue and extend the benefits of the work they had undertaken. In their reports, many were already clear about what these developments should be; for others, future plans were more generally expressed. All were committed, however, to further work:

> *We have learned a lot about teaching and learning. This has led to a revision of our Teaching and Learning Policy and a review of our teaching strategies. Elements of practice have been changed and innovations made … The work will continue, the expertise will grow, the strategies will develop…*
>
> *We have only just begun; but we have come a long way! This project has been even bigger than we originally predicted. Involvement has heightened professional debate in the school and teachers' learning has been as important as children's learning.*
>
> *We have all been enthused by the project and are strongly motivated to continue. The children's response has been our reward!*

The LEA, likewise, was determined to build further on the project even though the funding linked to the Education Development Plan had come to an end. A School Improvement Module, designed to replicate the key features of the original project, was set up for 2002 to 2003. It has been aimed at a new tranche of schools and consists of an initial two-day course for headteachers and key teachers. This is followed by school-based adviser support to help schools carry out an action research project, in a similar way that the original schools had done. The School Improvement Module was quickly oversubscribed, with more than eighty schools participating.

Schools subscribing to the module thereby became members of the Norfolk 'thinking schools community' and were entitled to send two delegates to the Thinking Conferences. In response to schools' requests, these will continue to be held, though now on a subscription basis, for as long as the demand holds. The summer 2003 conference has been planned to be a celebration of the project's achievements, centred around presentations by contributing schools.

Many schools have maintained the networks they had established with other schools. This is generally an informal arrangement characterised by reciprocal visits, occasional joint meetings or INSET, and much note-swapping by individual heads and teachers. The milieu for much of this exchange had always been the Thinking Conferences. This, of course, is one of the main reasons why schools were so keen that they should continue.

Alongside this report, Norfolk LEA has produced a training video to illustrate the main themes of the project (see bibliography). This is being used not just in the School Improvement Module but also as a central part of continuing advice and support on learning and teaching issues.

As this report is being written, the Qualifications and Assessment Authority has issued its pack *Creativity: find it, promote it*. We are now planning our response to this very welcome initiative, in the form of a new School Improvement Module for 2003-2004 entitled 'Creative Schools, Creative Children'.

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Conclusion: key messages

Teachers' enterprise and enthusiasm is alive and well	Teachers taking part in the project constantly referred to their excitement in making new discoveries about the nature of learning and in devising new strategies in their schools for putting this learning into practice. Participation in the project had a positive impact on teacher well-being and morale.
Creativity is released by teachers feeling in control	The sense of 'doing something for ourselves' was a strong motivator. Schools were energised by participation in a project which was not highly directive and which trusted their professionalism. They were quicker to spot opportunities and more prepared to take risks. Few schools restricted themselves to their limited project brief; most found that one idea simply led to another.
Curriculum innovation is compatible with national requirements	Schools were often surprised to discover that their innovations were in tune with national guidance; they were not only permissible but encouraged. As they experimented, teachers became more alert to the real messages of national guidance and to research findings which validated the approaches they were taking. Much of the work carried out by schools took place within the context of the literacy and numeracy strategies.
Networking sustains and enriches innovation	Many schools in the project worked in collaboration with others. This took many forms: informal telephone contact, shared resources and training, reciprocal visits, etc. Teachers often gave generously of their time and were clear about the benefits of learning from good practice in other schools.
Action research is a powerful tool for change	Despite initial reservations about 'conducting research', schools took very seriously the importance of evaluating the work they were doing. They assiduously collected evidence and analysed and interpreted it with care. The effects of greater reflectiveness, and the heightened ability to question, were felt in other areas of the school's work.
Whole school involvement raises the level of professional debate	In those schools - the vast majority - where all staff were committed to developing children's thinking skills, the project became a regular and frequent subject of informal staffroom discussion. Schools reported that the 'language of learning' acquired during the project raised the quality of debate to a higher plane.
Curriculum development needs nourishing to ensure greatest impact	Teachers agreed that regular and sustained support was a vital ingredient of the success of the project. This support, through conferences and adviser visits, offered them a framework for development, regular opportunities to discuss and assess progress, and a continual fund of new ideas. Just as important, their work was validated through its relationship to the project as a whole.
A 'thinking curriculum' is the key to raising standards	Conclusive statistical evidence (eg measured through improved NC test results) that the project has had a major impact on raising standards in project schools is not yet available. However, all the qualitative evidence collected during the project points in the same direction: schools feel it is sufficiently convincing for them to maintain and expand their commitment to developing children's thinking.

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Appendix 1

Keynote Speakers at the Thinking Conferences

Luke Abbott – Essex Education Authority
Vivienne Baumfield – Newcastle University
Stephen Bowkett – writer and independent Education Consultant
Oliver Cavaglioli – Model Learning
Kieran Egan – Simon Fraser University, Vancouver, Canada
Alec Fisher – University of East Anglia
Robert Fisher – Brunel University
Joanna Haynes – DialogueWorks
Roy Leighton – Independent Consultant
Karin Murris – DialaogueWorks
Rob Walker – University of East Anglia

Appendix 2

Norfolk County Council

THINKING SCHOOLS – THINKING CHILDREN

A FRAMEWORK FOR SELF-EVALUATION

Based on Effective Teaching and Learning in the Primary Classroom
(Sara Shaw and Trevor Hawes)

Establish an appropriate learning environment	**A**	**S**	**N**	**How?**
Do you value and create a safe and secure learning environment, both physically and emotionally?				
Do you build self-esteem?				
Do you help children believe that they can succeed?				
Do you encourage the children to take ownership for their learning?				
Do you help children to accept challenges positively?				
Connect the learning				
Do you relate new learning to previous knowledge?				
Do you reinforce previously acquired knowledge, skills and understanding?				
Do you take account of children's concentration spans in your planning?				
Do you help children to relate learning to their own experiences?				
Paint the big picture				
Do you outline what is to be learnt at the beginning of each lesson?				

A: Always S: Sometimes N: Never

Norfolk County Council

THINKING SCHOOLS – THINKING CHILDREN

Define the objectives	**A**	**S**	**N**	**How?**
Do you have clearly defined learning objectives for each lesson?				
Do you say what you want, not what you don't want?				
Do you connect into the children's values (CITV)?				
Do you explain 'What's in it for me' (WIIFM)?				
Do the children have clearly defined, achievable learning targets?				
Present information				
Does your teaching take account of the range of personal learning styles?				
Do you present information in a variety of ways?				
Do you consider gender issues?				
Do you teach in short bursts and present information in small chunks?				
Do you build good learning states, for example, humour, into your teaching?				

A: Always S: Sometimes N: Never

Norfolk County Council

THINKING SCHOOLS – THINKING CHILDREN

Increase knowledge and understanding	**A**	**S**	**N**	**How?**
Are you aware of your own preferred styles of learning?…..and…..				
Are you aware how this influences your teaching?				
Do you help children to relate learning to their own experience?				
Does your teaching appeal to both the left and right brain dominant learners?				
Do you use strategies which engage both brain hemispheres, for example, rhythm, rhyme, music?				
Do you consider the different forms of intelligence that children have?…..and…..				
Do you take account of these in your teaching strategies?				
Do you engage the children's emotions in your teaching?				
Demonstrate knowledge and understanding				
Do you encourage children to share their learning strategies?				
Do you use a range of assessment methods?				

A: Always S: Sometimes N: Never