National Teacher Research Panel
engaging teacher expertise

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Using Thinking Tools to enhance children's ability to think and improve national test results

Aim of the project

To discover the extent to which selected thinking tools could enhance children's ability to think from a viewpoint other than their own and thus help improve their optional Year 4 reading and writing national test scores.

Context

The study involved all of the 39 pupils in Year 4 of a Nottinghamshire Primary school. These children made up one target group of 15 and two control groups of 12 each. The target group spent half an hour each week on thinking skills. The three thinking tools selected were from the Edward de Bono CoRT 1 programme. Year 4 test results for reading and writing were compared with the children's previous Year 2 national test results and their targets of expected progress.

Summary of main findings

- Children in the target group outperformed their peers in both the Year 4 reading and writing national tests.
- 80% of the target group exceeded reading targets set for them for at the end of Year 3.
- Eight children in the target group achieved Level 4 in the Year 4 reading test, where only one was predicted to when targets were set.
- 67% of the target group exceeded writing targets set for them at the end of Year 3.
- The average score for the writing task 'Dear Grandad', which required the children to write as another person, was three points higher in the target group than in both of the control groups.
- As time went on, use of all three thinking tools was extended from the thinking skills lesson into other lessons and situations.
- The 'Other People's Views' (OPV) thinking tool was found to help improve these children's ability to think from a viewpoint other than their own and helped them to recognise the author of a text as a person with an important viewpoint.
- The children developed a sense of 'ownership' of the thinking tools over the course of the study. They enjoyed using the thinking tools for national test preparation and other activities - some reported using them independently in their daily lives.

Background

I first came across the use of Edward de Bono's thinking tools in a school context during a professional development study visit to Malta in February 2001. At the time, Malta was part-way through a National Research Project looking at the impact of teaching thinking tools from the CoRT 1 programme .This was achieved through the existing PHSE teaching system and involved pairs of peripatetic teachers withdrawing classes into smaller groups for thinking skills lessons. Although it was clear that the same system would not realistically translate into British schools, the potential for using the thinking tools was recognised and seen as exciting and powerful.

Lynncroft is a Primary School with 234 children plus a 50 place nursery. It is situated in the ex-mining community of Eastwood in north-west Nottinghamshire. The children are 98% white British and 8.6% of them receive free school meals. The school has a good reputation for inclusion and the percentage of children with Special Needs is 27%. Baseline assessment shows that pupils enter the school with below average ability, particularly in language skills.

Having spent several years conducting optional reading and writing national tests in my Year 3/4 classes, and trying to produce results that demonstrated progress on Year 2 results, it was evident that my children were not coping satisfactorily with certain aspects of the tasks set. Upon further analysis of both the skills required to complete the tests and the responses that children had typically made, it was recognised that many of the children were struggling with the specific elements in both the reading and writing tasks that required them to think from the point of view of another person. I set out to discover the impact of using three thinking tools from the CoRT 1 programme on my own pupils.

Teaching processes and strategies

Lynncroft is an open-plan School where members of staff typically work in teaching teams, sharing planning and teaching strategies. In Year 3 and 4 the children spend most of their lesson time organised into three, mixed age group, mixed gender, mixed ability teaching groups. The Year 4 pupils in each of these three groups became the target group, control group 1 and control group 2. The three groups were already established prior to the study and were designed to be parallel, largely based on Year 2 reading and writing national test and teacher assessment results. The target group was introduced to thinking skills and the use of the thinking tools early in the autumn term of 2001. A half hour session each week was dedicated to the teaching of the tools for most of the ensuing year. Later in the school year we began to also use the tools in other relevant situations and lessons.

Each of the CoRT 1 tools I selected is designed to broaden thinking. Edward de Bono recognised that children (and many adults!) tend to take a narrow view and often make instant judgements about things. These views also tend, naturally, to be centred upon them selves. The tools are designed to move thinking beyond this.

The first tool we practised was the 'Plus, Minus, Interesting' (PMI), described as an "attention-directing" and "perception-broadening" tool. When describing how to do a PMI, Edward de Bono says,

> *"It is not a matter of thinking of the points as they come up and then dropping each into a box labelled, P, M or I. It is a matter of specifically looking in the Plus direction first and noting what you see...then looking specifically in the Minus direction and noting what you see...and finally looking specifically in the Interesting direction."*

Using this tool led us to engage in "parallel" thinking where we were all focused on the same direction of thinking at the same time. The 'Interesting' part of a PMI requires that you consider neutral points, possibilities and speculations which lead naturally into creative thinking. We used PMI for general discussion (e.g. half term holiday), and in Literacy (e.g. to help construct argumentative text). Ultimately we used it to evaluate the research project when the children did a PMI about using Thinking Tools!

The second tool to be introduced was the 'Consider All Factors' (CAF), designed to look as widely as possible at all the factors involved in a situation, instead of only the immediate ones. A key element in considering all factors is to keep asking the questions, 'What else is there?' and 'What have we missed out?' We used this tool in many different areas of the curriculum, but found it particularly useful in Literacy, especially when preparing to do 'published' pieces of writing. Here we would consider the factors specific to a certain type of writing as well as generic factors such as spelling, punctuation and handwriting.

The final (and probably most important in terms of the research) tool to be introduced was the 'Other People's Views' (OPV), designed specifically to consider the viewpoints of others. The OPV has two stages. The first stage involves identifying the people, or groups of people, that are involved in or affected by the situation or question. The second stage involves putting yourself in the shoes of each of these people in turn and expressing what they think and feel as if you were them. An OPV is therefore expressed in the first person. Again we used OPV in different situations and curriculum areas. As time progressed and the national tests drew closer, the focus of our thinking tools lessons was extended to Literacy lessons. All three teaching groups started to use the weekly half-hour session to set up reading comprehension homework tasks. Pupils in my target group used OPV when looking at pieces of text. The first stage was focused on identifying the characters and the author as a person with a viewpoint. During the second stage of the OPV they put themselves into the shoes of the characters (investigating their feelings and motives) and the author (investigating his/her intentions, word choices etc).

Findings

The results show that use of the thinking tools had a major impact on the children in the target group, both in terms of their optional Year 4 reading and writing national test results and more generally in terms of motivation and enthusiasm. The charts below demonstrate how the three groups were considered largely parallel before the research project began and the ways in which the target group had made larger gains by the end of the school year.

Chart 1 shows average scores that were calculated for each group in end of Key Stage 1 national reading and writing tests. Chart 2 shows how; by the end of the research project, the target group had improved their results above and beyond their peers in both reading and writing. It should be noted that there were two children in the target group and one in control group 2 who had a score of 'below Level 2' in the reading test. Their scores were not included, as this score has no specific numerical value.

There is obviously an issue remaining here about children who do not read well enough to access the national reading test assessment. However, this should not detract from the gains made by the other children who were able to put their enhanced ability to think from a viewpoint other than their own into practice. In support of this, the two children in question did demonstrate this skill in verbal and written responses to classroom work and one of them made good progress in the Year 4 writing test.

Chart 1

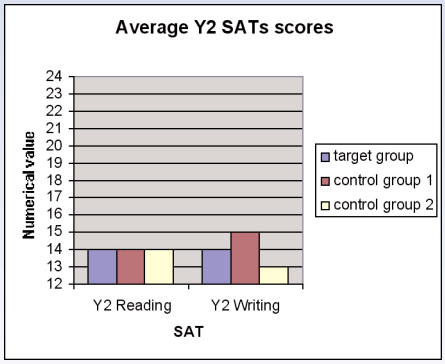
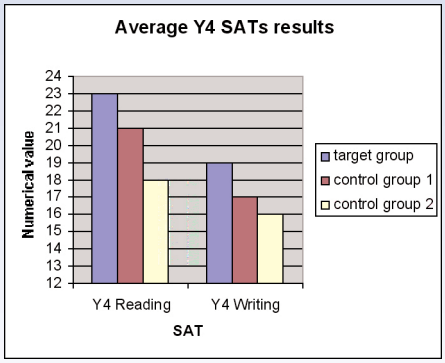


Chart 2



Outcomes of the Year 4 national tests were also compared to targets that had been set for the children at the end of Year 3, before the research project had been devised, and to national standards. The findings of these comparisons are illustrated in tables 1 and 2. Table 1 also shows the percentage of the groups who reached the national average for Year 4 and those that reached Level 4 (the national average for pupils at Year 6). In the target group 53% represents the eight children who achieved Level 4, which compares to a target figure of 7%, equating to one child.

Table 1: Year 4 national test results in Reading

Y4 Readingμ SAT	Target Group	Control Group 1	Control Group 2
% meeting or exceeding targets	87%	50%	67%
% exceeding targets	80%	42%	42%
% reaching or exceeding National Average (3b+)	73%	25%	50%
% reaching Level 4	53%	17%	33%

Table 2: Year 4 national test results in Writing

Y4 Writing SAT	Target Group	Control Group 1	Control Group 2
% meeting or exceeding targets	80%	67%	25%
% exceeding targets	67%	17%	17%
% reaching or exceeding National Average (3b+)	26%	0%	17%

Direct evidence that the children had improved their ability to think from a viewpoint other than their own was seen when looking specifically at the outcomes of the writing task 'Dear Grandad' , where the children are expected to write a letter as the character Carla. It was found that children in the target group scored an average 3 points higher (with an average mark of 3c equating to 19 points) than those in both control groups (with an average mark of 2b+ equating to 16 points).

The following examples are extracts from the writing of one boy and one girl pupil, both from the target group, who both scored 6 points higher in the 'Dear Grandad' task than in the other national test writing task (a description of 'A Special Object').

"Dear Grandad,

When you wrote to me my mum had a baby so you was right four for a boy and our secret. remember."

"Grandad what have you been doing? has it been snowing or ranning? How are you going to sleep all right? I've haven't slept a wink yet all I can here is the dog next door barking as ever and still police sirens and that T.V next door is still going on every night."

"Dear Grandad,

yes your right he was born! It is his birthday today, and he's one. Mum's called him Timmy, his hair is so very soft, and he have buitful blond hair, and is so tiny. Seven magpies have come to my bird house, every day this week. Then I fond out why, Timmy has lernt how to speak, he said Carla! my name. Mum and dad do not now yet, he will not speak to them, only me. It's a secret."

The boy pupil also wrote, in the end of study evaluation, about thinking tools: "It helped me to answer, to be Carla."

Evidence of the other outcomes lies partly in my general observation and professional judgement and partly in written and spoken testimony of the pupils involved. Use of the thinking tools and the children's 'ownership' of them developed as the study progressed. We began to use the tools in a variety of lessons like Science, Art and Design Technology. Initially, this was at my suggestion but ultimately the children were willing and able to suggest which tool(s) would be useful in a particular lesson/context. Further evidence of 'ownership' was given when the children, when answering questions about thinking tools at the end of the study, suggested that they make up their own questions. Their questions included:

"Would you suggest using a thinking tool to a teacher if you thought it would be useful?"

"Has using Thinking Tools made you a better person?"

'Ownership' was also demonstrated in a written response about PMI, which read:

"I did a PMI at home on my brother Sam."

The OPV became very important in developing children's ability to think from a viewpoint other than their own. In terms of reading comprehension its most noticeable benefit was to give the children an understanding of the writer as a person with a viewpoint. This undoubtedly helped them to answer questions referring to the writer's reasons for something, for example, "Why do you think the author chose to tell the story in letters?"

Evidence of the usefulness of the tools and the children's' enjoyment in using them was found in their written responses, given during an end-of-study evaluation. For example:

"I like using thinking tools with my work and to help me with my tests. It's also good fun to do. They helped me with my tests because we had to write a letter as somebody else."

"These thinking tools helped me to do the test this morning and lots of more things we did."

"I think they are a brilliant idea, it really helps me and I think it will help other people."

"They do help me to do lots of things. I like using the thinking tools. It is interesting. I have used them in a lot of things like Science."

Generally we had a thoroughly enjoyable year and I observed a well-motivated happy group of hard working children.

Research methods

I used an experimental research design, which consisted of:

- a comparison of three matched groups of Year 4 pupils from which progress made by the target pupils above and beyond what they would have made over the course of the year could be examined by using targets set by three teachers before the study began; and
- a comparison of national test results themselves.

In addition, I adopted other methods of providing evidence, for example:

- records of written responses made by pupils were kept;
- lessons were videoed and transcribed;
- Year 3 and Year 4 national test reading papers were analysed by examining responses made to those questions that, it was agreed, directly required the skill of thinking from a viewpoint other than your own;
- I kept a diary of observations;
- the children were asked evaluation questions at the end of the study, in order to collect evidence of gains in terms of enjoyment and motivation; and
- the children also answered questions about their own thinking at the beginning and at the end of the study to examine possible gains in metacognition.

Conclusion

This project produced unexpectedly good results given the short time scale. I intend to repeat the exercise with a different group of children to see if similar results are achieved. The children who took part in the study will be sitting their end of Key stage 2 national tests this year. It will be very interesting to see if they have maintained the gains made during the year of the study. I wonder what gains could be made if the use of these thinking tools was adopted across a school or Key Stage? My one concern remains with those children who could not access the reading assessment, presumably unable to apply thinking skills to questions they cannot read. This study made me much more aware of what the Year 4 national tests require of children; it would be valuable to examine Year 2 and Year 6 national tests in the same way - that is, if they are here to stay!

Suggestions for further reading

De Bono, E. (1987) “CoRT Thinking Program: CoRT 1”

De Bono, E. CoRT Thinking Lessons CDRom (with MindMap supplement)

De Bono, E. (1996) “Teach Your Child How to Think”

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