

The Leonardo effect takes flight

Encouraging pupils to be curious and letting them decide how to explore their ideas further has had amazing results

By Henry Hepburn

SIMULTANEOUS TEACHING of art and science has had an astonishing impact in primary schools, giving wings to children's curiosity and freeing teachers from lesson plans.

Teachers have been so impressed by a project examining the so-called Leonardo effect, that not a single negative response emerged from 1,200 comments. Parents and pupils were "overwhelmingly supportive".

Despite the fact that sessions involved an often stressful requirement to throw out lesson plans – leading to "more noisy and messy" classes – they were remarkably successful. External evaluators found that previously uninterested children had become "fanatical" about their work and headteachers felt the project summed up "what good teaching was all about".

The project is based at St Mary's University College, in Belfast, but the 19 schools involved were also drawn from Scotland, Wales and the Republic of Ireland. The two Scottish schools were in East Renfrewshire: Carolside Primary in Clarkston and Crookfur Primary in Newton Mearns.

Two teachers from each school – mostly primaries – received two days of training before embarking on an eight-week programme, with a range of age groups involved.

The two main characteristics of the project were the combination of science with creative and artistic expression, and the "empowerment of learners"; in other words, pupils decided themselves what they should be doing.

It amounted to what researchers described as a "huge pedagogic challenge" for teachers.

All schools used flight as a theme. Classes were introduced to books and other printed resources; they made visits to places associated with flight, such as wildlife centres and aircraft manufacturers; they experimented with model flying kits; they wrote about and drew mythical flying creatures; and they were visited by artists, scientists and falconers.

As the researchers state in a report: "Leonardo is not just about science and art. It is about facilitating co-operative learning in classrooms; about the value of out-of-school personnel (particularly experts and enthusiasts); about empowering autonomous learners; and (above all) about



Inspired by Leonardo da Vinci, the 15th-century artist, sculptor, inventor and mathematician. Photograph: superstock

making connections across the learning landscape."

As the title suggests, Leonardo da Vinci is the inspiration: crucially, because he was "endlessly curious" about new ideas, whether in art, science or other areas altogether.

Children were encouraged to be equally curious and decide

for themselves what they would like to explore, and how to do this.

While some teachers found the "free-wheeling" sessions "threatening" and "daunting" – one said it was "totally against the grain not to plan in detail" – their overall reaction took researchers aback.

"They were spreading their

pedagogic wings and experiencing an approach to the curriculum that was almost entirely new," the report states.

One teacher said: "I liked having the freedom of being able to teach things as they came up, instead of worrying that I hadn't covered everything on

A leg to stand on

A group visited a water sanctuary, and two boys in particular were fascinated by the behaviour of a heron. They wanted to create a life-size model, and managed to do so by studying photographs and their own drawings.

The end result was "dramatically realistic", but its long, thin legs meant the ankle joint kept collapsing. The boys debated the problem with their teacher and a university physics student who was an adviser on the project. Rather than provide direct answers, they advised the boys to go back to source material and examine how the heron had managed to stand up.

Only then did the boys notice the connection between the heron's feet and legs that gave it stability. The boys made triangular inserts for the model heron's heels to replicate this, which represented a "profound step forward" – they had solved a problem that, previously, they did not even know existed.

my art and science planner."

The potential links with Scotland's new curriculum did not go unnoticed, and one headteacher said: "The children felt they were in charge, they knew where they wanted to go and how to get there, and this gave them confidence."

"They themselves will be able to say why the Curriculum for Excellence capacities have been met – they are certainly reflective and successful learners."

The upbeat report was tempered, however, by the observation that the Leonardo effect is a costly process – funding was provided by the National Endowment for Science, Technology and the Arts (NESTA) – and might be too expensive to run in the long term.

It was also remarked that it would be far harder to introduce into the more rigid, subject-orientated timetables of secondary schools.

Only one secondary took part in the project, and pupils there considered it arts-based. That contrasts sharply with primary schools, where the integration of art and science was not an issue – pupils simply thought they were taking part in activities that "they liked and were fun to do".