



Supporting gifted & talented students

Practitioner research is an effective approach for empowering teachers within a profession that is dedicated to improving the quality of educational provision.

In this issue of *Inside Information*, we've selected summaries of research projects carried out by teachers because they offer useful insights into some of the issues and effective strategies used in teaching gifted students.

The National Academy for Gifted and Talented Youth *Developing Expertise Awards* support practitioner research into gifted and talented provision at school level. These awards are designed to support specific improvements for the schools taking part and to contribute to the national knowledge base for gifted and talented education. The successful award holders have worked in partnership with experienced researchers in Higher Education to develop G&T initiatives and to assess their impact on pupils' learning.

Several of the summaries focus on a key issue in G&T education – personalisation – and all adopt different approaches to the common concern: How can we ensure that an individual's education fulfils his or her potential? Carolyn Williams' project for example, used pupil voice to analyse ways of challenging G&T students. Her work shows

how a change of teaching style can meet the needs of gifted learners. Ben Rule asked Year 10 G&T students to help him explore causes of underachievement amongst other G&T students, whilst Keith Watson found that the personalised learning logs kept by pupils at his primary school revealed ways of differentiating the curriculum effectively. Two teachers (Catherine McLroy and Peter Riches) used approaches derived from research to develop an inclusive approach to teaching in their schools.

The National Teacher Research Panel interviewed the practitioners to find out about their reasons for carrying out their studies – and where they plan to take their ideas next. The NTRP are pleased and proud to have worked with NAGTY. We hope you find these summaries inspire you to challenge your own thinking and practice in teaching gifted learners.

Dr Ruth Hewston, Senior Research Fellow,
The National Academy for Gifted and Talented Youth

Jill Martin, Chair of the National Teacher Research Panel

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The National Teacher Research Panel is an independent group of practising teachers who work to:

- ensure that all research in education takes account of the teacher perspective;
- ensure a higher profile for research and evidence informed practice in government, academic and practitioner communities; and
- increase the number of teachers engaged in and with the full spectrum of research activity.

The Panel is sponsored by the Innovation Unit, General Teaching Council, the Department for Education and Skills, and the National College for School Leadership.

How can we challenge gifted and talented students?

Carolyn Williams

Aware that lack of challenge and boredom in lessons are likely to lead able students to underachieve, Carolyn investigated the kinds of strategies and activities that would re-engage and challenge G&T students. She found that G&T students felt that collaborative, open-ended tasks involving higher-order thinking activities (which meant manipulating or applying data) were the most challenging. They also felt that having a good relationship with their teacher and peers was important. When the students felt relaxed, they were more open to experimentation and more willing to try out new ideas.

Why did students find open-ended activities the most challenging?

Students found open-ended activities (such as science experiments, decision-making exercises in humanities and problem-solving in maths) challenging because they gave them more freedom to explore and develop their ideas. For example, in a geography activity called 'The Trading Game', students were put in groups representing countries. Each country was allocated different resources based on their economic development. They had to trade with other countries to make the required product. During the task, the teacher, acting as the World Bank, introduced quotas and incentives to simulate the realities of world trade. The students commented how they enjoyed playing such challenging games in lessons, and that they disliked the fact that some teachers thought of these activities as "treats".

How did higher-order thinking skills make the open-ended tasks challenging?

Lesson observations showed that to be really challenging, open-ended tasks needed to include higher-order thinking skills – students needed to be asked to manipulate information before they applied it to a problem, justify a statement or action, or evaluate the information. For example, in a German lesson, students were given dominos with different phrases from which to create their own sentences. They were encouraged to extend the sentences or group them together to see who could create the longest line. In an example of a less challenging lesson, students were required to plan an expedition to Antarctica using books and the Internet for information, then write a report. The students would have found the project more challenging if they had had to use the information to decide, for example, why an expedition had ended in disaster.

Collaborative work can be very effective in increasing challenge especially when there is ample opportunity for discussion

It was also important that teachers increased the challenge by introducing some conflict into the students' thought processes. Teachers did this through asking questions and making suggestions to look at a problem from different angles. This worked especially well where the students worked collaboratively because they could discuss their ideas and justify their differing views and opinions to others. For example, an English teacher began a lesson about the play

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Panel member Angela Hardman asks ... What could this research mean for you and your pupils?

Carolyn's research reminds us all to consider how we ensure that we use open-ended tasks to extend learning productively. The study also showed how challenge was created through asking students to work collaboratively and helping them to feel relaxed about experimenting with conflicting ideas.

■ Could you do more to help your students feel open to experimentation by showing them you enjoy working with them and value their opinions etc?

■ Could you do more to ensure that the open-ended tasks you give your students include a significant proportion of higher-order thinking that involves processing and manipulating complex information? Could you share ideas with your colleagues for different ways of doing this?

■ Could you plan for group work that would promote challenge and engagement? Would you find it helpful to monitor the effects of G&T students working in similar and mixed ability groupings?

■ Would consulting your students be a useful way for moving yours and your pupils' learning forwards?



Angela Hardman is a geography and Advanced Skills Teacher for Thinking Skills and Research at Rivington and Blackrod High School, Horwich, Bolton.

Macbeth by asking:

“When exactly does the murder take place? Is it in act one or act two? Do we know?”

The students explained how the murder took place between the acts. This led the teacher to ask further questions like:

“How does this add to the drama of the play?”

“Can you think of a modern film which uses similar tactics?”

Why was collaboration important?

In all types of activities, the students felt that challenge was most stimulating when working collaboratively, preferably with peers of similar ability. They felt particularly challenged when thinking aloud and experimenting with ideas rather than simply being expected to give the right answer. In the English lesson described earlier, the students had to work in groups to create and defend an argument to explain why Macbeth was a murderer. During the task, the teacher went round to each group asking questions such as “What if ...” and “Yes, but have you considered ...?” The students thought this task was effective in creating challenge as the group work led to more diverse ideas being shared.

How did the teachers establish a good relationship with the students?

Students felt comfortable about being challenged when their teachers:

- respected the students and enjoyed being with them
- were enthusiastic about their subject
- were organised and had good subject knowledge
- taught well-planned and focused lessons
- were relaxed and open
- had established and clearly set boundaries.

Should every lesson be challenging?

The students unanimously agreed that they would not like to be challenged to their maximum capability in every lesson. Although being challenged increased their learning and enjoyment, they felt they would be too tired and not capable of performing well if every lesson in a day was designed to be as challenging as possible.

How was the research designed?

Carolyn interviewed nine Year 9 students identified as the most able students in the year group via their MIDYIS and SAT scores, and observed four of their lessons (maths, languages, English and ICT), to find out the strategies their teachers used for increasing challenge. You will find the lesson observation proforma and interview schedule Carolyn used on page 14.

Find out more

Williams, C. (2006) Providing challenge and engagement in classroom learning for G&T students. The National Academy for Gifted and Talented Youth. Available from:

http://www.nagty.ac.uk/research/practitioner_research/developing_expertise_awards_05_06.aspx

Higher order thinking skills activities:

http://www.teachers.org.uk/resources/pdf/thinking-skills_2913.pdf

An interview with Carolyn Williams

In her second year of teaching, Carolyn was given a top set GCSE group, which made her question the level of challenge she was providing for learners in her classroom. She frequently used *Thinking Skills* activities, but wanted to find out if she was deploying them effectively. As part of the Fast Track teacher programme Carolyn was encouraged to identify and investigate a cross-curricular theme, which led to her focus on gifted and talented students.

Carolyn recommends that anyone beginning a research project should identify a critical friend to work with. She felt that the support from her mentor, David Leat, of the University of Newcastle was invaluable: ‘He would offer a different perspective and would encourage me to look at my findings in new ways that I perhaps would not otherwise have considered’. He also helped to steer her through the vast amounts of literature available, highlighting those which would be most useful. Working together in this way helped Carolyn feel more confident about the rigour and validity of her research.

Equally important was the support Carolyn received from her colleagues on the school’s teaching and learning group. She was able to discuss and share with them the development of her project: ‘They were able to help me make sense of my results in the context of my school and our pupils’.

Carolyn stresses the importance of keeping your project small and focused: ‘Think carefully about why you are doing the research, what you want to achieve and do with the findings’. Questions from her initial exploration are now forming the basis for new research projects involving other colleagues from her school.

Carolyn Williams

is a geography teacher and G&T co-ordinator at Easingwold School, North Yorkshire



What causes G&T students to underachieve?

Ben Rule

Ben set out to investigate the causes of underachievement by asking G&T students from Year 10 to work as peer coaches with 15 underachieving Year 8 G&T students. The coaches helped Ben to identify the causes of underachievement through collecting interview and questionnaire data. Like other researchers, Ben found key reasons for underachievement included:

- lack of challenge in the classroom (commented on by 12 students)
- a mismatch between teaching & learning styles (8 students)
- differences between teacher & student expectations about levels of attainment (8 students).

But Ben also identified other factors not previously explored by the research lit-

It would be wrong to conclude that the students are underachievers, when in fact they have chosen not to engage with learning at all

erature – in particular, that underachieving G&T students may lack the study skills that enable them to translate their abilities into achievement (commented on by 10 students). The findings challenged a commonly held view that the main cause of underachievement in G&T students is choosing to sacrifice achievement in order to fit in better socially. Only four of the students commented that they were affected by negative peer pressure.

As well as helping to identify the causes of underachievement, the peer coaches were also effective at helping to tackle some of them.

Mismatch between teaching and learning styles

Just over half the students were clear that they had lost the motivation to do well in at least one of their subjects due

to a clash between their style of learning and the teacher's style of teaching. The most common complaint from the students was that learning activities in the classroom provided them with little choice about how to complete them – they were given few opportunities to be original, creative or develop their own ideas. They felt they were being told what to think and say in order to do well. The mismatch typically happened in the subjects in which the students were most able.

For example, one student underachieved in English and humanities more than in other subjects because she disliked having to complete lots of short, structured answers. She preferred to write longer pieces that explored open-ended questions. Another student who had a passion for art, underachieved in the subject because he questioned his teacher's conventional methods – he wanted to be more explorative and innovative in the techniques and materials he used for his work.

Just over half the students who were critical of the learning styles they were

An interview with Ben Rule

Ben runs a Learning and Teaching research group at his school which placed much emphasis on students with Special Educational Needs. The group had become particularly concerned that gifted and talented children were possibly more vulnerable to pressures such as fear of failure and perfectionism than other students, and that these were causing them to underachieve. The group decided to research this issue by exploring how students come to terms with their 'giftedness'. The research project involved able Year 10 students peer coaching Year 8 students to help identify and tackle the reasons for the younger students' underachievement. The project was so successful that "within a year, peer coaching was taking place with all year groups".

Ben's school was very supportive of the project. It made gifted and talented learning its focus for staff training that year. The research project helped to open up a dialogue which was used to shape the provision for gifted and talented learners in the school. Many changes of practice were implemented as a result. For example, the school reviewed and improved its praise and rewards policy because staff felt that excellence had been taken for granted in the past, and had been

rewarded insufficiently. Teachers had felt they were providing opportunities for challenge in the classroom but the students didn't always agree. Many had also assumed that highly achieving boys would naturally be able to write well when in fact they found that many were auditory learners. The teaching in top sets now takes account of this.

Ben advises anyone thinking of tackling a similar research project to "Think small and then reduce it even more. Focus on just a few students".

Ben Rule, is Assistant Head for Learning and Teaching, at Ringwood Comprehensive School, New Forest. At the time of his research Ben was AST for Learning and teaching at Twynham comprehensive School, Dorset.



forced to work within, admitted that they spent at least one hour a week working at home on their own projects which were related in some way to a subject at school, but which they had generated themselves and which they would never share with their teacher. This included a boy who had learnt to speak Elvish, a fantasy language based entirely on an alien alphabet, syntax and structure, yet who was placed in set 3 for French because he did not engage with NC level 1 vocabulary.

Needing to be challenged

Ben found that confusion over the difference between 'learning' and 'work' caused some students to be labelled as underachievers, when in fact they were not underachieving at all. This seemed to be particularly true of auditory learners, especially boys. For example, four of the boys said that they saw no point in making notes and writing down factual information which they had either read about in textbooks or heard the teacher explain at the start of the lesson. They felt that writing it down did not enable them to remember it any better and in fact interrupted their thinking about the subject. They felt they could gain more by discussing the subject in greater depth and complexity than recording information on paper.

The issue for these boys was that their need to be challenged was not met. The types of work the students were being given was in effect preventing them from using their initiative, being creative, questioning, analysing and working collaboratively – in other words, all the things that brought learning to life for them. Situations such as these caused gifted students to disengage from learning or disrupt the learning of others in the class.

Needing help with study skills

Both boys and girls said that they would like to be taught revision skills to help them to prepare for tests and exams. Some felt they were able to get by without revision, but others found it hard to learn key information in a focused way that prepared them for tests. Similarly, students felt they would

Peer coaches can play a very important role in helping establish a school culture where the focus is on learning and where it is positive to be bright and fashionable to achieve

benefit from being taught a wider range of strategies for note taking, reading, writing and research; things that might have passed them by at earlier stages when their pre-existing knowledge about such strategies was unnecessary. They also hoped that the wider range of strategies might enable them to adapt pieces of work to their preferred styles of learning and thinking.

How did peer coaching help to tackle underachievement?

Ben's study showed that peer coaching was effective at raising student effort and attainment where, in the minority of cases, the students' underachievement was due to relationship problems (negative peer pressure, friendship issues, low self-esteem or fear of failure). He suggested that the reason why peer coaching was effective

Teachers, if they're not careful, can assume G&T students are naturally interested and self-motivated and that they like written work more than other types of work

at overcoming relationship problems was due partly to the fact that the coaches were chosen because they were both gifted and popular with their own peer group. Being connected with the "in" set and one of the "cool" people in school helped the younger students to gain status in the eyes of their own peer group.

Peer coaching also helped to overcome relationship issues because the older students showed:

- understanding (which enabled the younger students to overcome feelings of loneliness and isolation)
- acceptance (which enabled the younger students to overcome their fear of failure and to feel more self-confident and therefore able to make and keep friends)
- objectivity (which enabled the younger students to analyse and reflect on their relationship problems).

Panel member Angela Hardman asks ... What could this research mean for you and your pupils?

Ben's research project found peer coaching was an effective way to identify and begin to tackle the reasons for student underachievement. It showed the main reasons for underachievement were lack of challenge in the classroom, a mismatch between teaching and learning styles and the students' lack of study skills.

- Where might peer coaching help staff and students in your school?
- Could you create more opportunity for students to evaluate and share their own learning needs?
- Could you do more to translate students' expressed wants and needs into action and change in your classroom?
- How could you find out if you are challenging gifted and talented students sufficiently?
- How might you equip your gifted and talented students with the study skills necessary to achieve at the highest level?

The coaches helped the underachieving students gain a sense of perspective about the relationship problems that overshadowed their learning, and introduced them to more mature ways of dealing with the teasing, labelling, jealousy and back biting they sometimes faced.

Peer coaching was less effective where underachievement was due to lack of study skills, and lack of challenge in the classroom. Although the coaches passed on study skills and learning strategies to the Year 8 students, there was little improvement in their attainment. This was because their teachers did not reinforce the skills and strategies during lessons. Similarly, the coaches were unable to influence the extent to which lessons challenged gifted students.

How was the study designed?

The Year 10 coaches drew up a learning questionnaire based on their initial meetings with their year 8 students and logged the key points of their discussions in subsequent meetings on cards. The cards and questionnaire responses were used to explore and categorise the reasons why the students underachieved. You can see the cards the coaches used and the questionnaire the coaches devised on page 15.

Ben also collected achievement data from the grades, comments and rewards that teachers gave to students for their attainment and effort, which he used to measure changes in the performance of able underachievers who had been coached.

Find out more

Rule, B. (2006) Using peer coaches to explain and tackle the underachievement of gifted students. The National Academy for Gifted and Talented Youth. Available from:

http://www.nagty.ac.uk/research/practitioner_research/developing_expertise_awards_05_06.aspx

CPD in a nutshell, 'Gifted but not achieving: exploring underachievement in G&T pupils':

http://www.nagty.ac.uk/professional_academy/nutshells/cross_phase.aspx

How did the school identify the able underachievers?

All staff were given training on behaviours associated with underachieving and possible reasons for them. These included:

Behaviours	Possible reasons for behaviours
Challenges the relevance of the activities set.	"I simply can't learn like that ... I have a passion for this subject, but I'm frustrated that we can't study the really interesting bits."
Spars with and argues with the teacher.	"You tell me what to think and say; you make me jump through hoops. You give me no ownership or independence, no freedom or choice."
Comes alive in class discussion and says brilliant things in oral work, but written work shows total lack of effort, care and pride.	"I easily remember things the teacher says and things I read in books, so I don't see the point of having to write them down as well."
Extension work shows little effort, but there is evidence from what the student says that s/he has spent time on another, vaguely related area of work.	"I see no point in that piece of work, but I really need to learn about so many other things that fascinate me. That's why I spend hours on personal projects."
Finds it difficult to start a piece of work and even harder to finish it.	"I'm a perfectionist. I'm never happy with anything less than perfect marks. If I can't produce perfection, I won't hand anything in."
Hides their ability – won't show it for fear that others will see it.	"I can't do as well as my teachers expect me to." OR "I deliberately underachieve in an effort to gain acceptance or at least tolerance from peers."
Apologises and/or makes excuses for the quality of their work, even though it's good. Can't see why pieces of work are good – only sees what needs to be done to improve them.	"You think I'm clever, but I know I'm not I was lucky with that last piece of work. If I'm not careful, you'll find me out to be the fraud that I am."
Dependent on constant reassurance and encouragement.	"I'm not coping with the pressure. Please help me."
Says s/he doesn't know the answer to questions even when s/he does. Might copy the behaviour of those who get told off.	"There are lots of people in my class who will make fun of me if I am keen and get high marks."
Spends most of the time in class talking to friends.	"I just want to chat to my friends – people like me need to work harder at fitting in than others. I can catch up at home or at revision time."

How might we identify creative talent? **Ben Schmidt**

The previous study showed how the process of identifying G&T students can throw up some real surprises. We illustrate this through this next study. Ben Schmidt felt prompted to explore the identification of students with exceptional talent in dance when a new Youth Dance Academy started up in the area, which offered specialist training for students with exceptional potential whatever their background. The Academy emphasised the importance of identifying raw talent because it had the potential of opening the doors to exceptionally talented young people from under represented or disadvantaged backgrounds. Ben surveyed 55 students and teachers involved in the selection process and interviewed some of the students, parents and staff to find out their views.

Teachers nominated students with a wide range of experience (from street dance to formal ballet) to audition for the Academy. When selecting students, the Academy aimed to look beyond mere technique (doing the steps well) as well technical dance training in particular dance styles, in order to identify natural talent. They looked for:

- physicality – suitability of body type and physical commitment to movement material
- musicality – physical response to music, both rhythmically and emotionally
- creativity – ability to apply imagination and creative ideas to movement material
- expressiveness – depth and quality of expression
- attitude – commitment to, and focus on the dance work
- *Je ne sais quoi* – the ‘presence’ of the performer.

Ben found that students who were identified as having raw talent particularly benefited from mixing with like-minded

Panel member Lou Harrison asks ... **How could Ben’s work help you and your students?**

This enquiry raises important issues about the identification of ‘raw talent’, not just of already accomplished performance and the need to support such students’ self-esteem, social skills and emotional maturity as much as their potential for excellence.

- How do you recognise and develop raw talent in the classes you teach? How do you record ‘*je ne sais quoi*’ on a G&T record form?
- Could you and your colleagues develop lists of criteria for identifying creative talent, in other areas of the curriculum, such as, music and art and design?
- How might you and your colleagues develop aspects of policy and classroom practice to recognise and support talented students social and emotional needs?

people at the Academy. But they also faced a number of social and emotional challenges, including, lack of self-confidence, and lack of self-discipline and personal responsibility required by the specialist training.

Find out more

Schmidt, B. (2006) Constructing a pyramid of progression for talent in dance. The National Academy for Gifted and Talented Youth. Available from:

http://www.nagty.ac.uk/research/practitioner_research/developing_expertise_awards_05_06.aspx

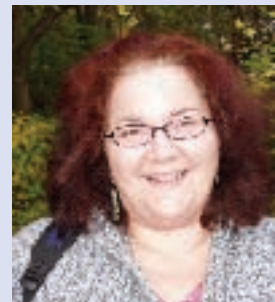
An interview with **Ben Schmidt**

Although Ben’s enquiry wasn’t designed to make a difference to teaching specifically, it has clearly begun to inform the identification of creative talent within schools. It’s also made a difference to Ben’s thinking by demonstrating the need to balance clear and objective criteria for identification with an equally important *Je ne sais quoi* factor: “Finding that balance is something I apply in other areas as well – you seek the balance between hard data and informed professional judgment, and in doing so you create space for learners to grow into something far more than you could ever have imagined.”

Thinking about professional colleagues who might be considering engaging in their own enquiries, Ben is clear: “I would really encourage people to do it. I’d say it’s important to engage with colleagues and other settings so that you can compare results. A well-focused question at the start of the enquiry helps you to discuss and reflect with a common focus and within very meaningful conversations – this allows learning to travel between institutions”.

Lou Harrison

is an Advanced Skills Teacher based in a Leicestershire community primary school.



Ben Schmidt

is Swindon Ten Learning Network Coordinator.



What do G&T students gain from enrichment activities?

Anthea Heaton

Anthea, a science teacher and her school's G&T co-ordinator was keen to find ways of raising the profile of science among G&T students in her school. Her study stemmed from a concern in her school that fewer able students were choosing to study triple science at GCSE (traditionally chosen by highly able students) and this was having an impact on the numbers choosing to study sciences at A level.

Anthea was interested in finding out how her students' experiences of science outside of the classroom influenced their attitudes towards science. Her study showed the value of extra curricular enrichment experiences in raising the profile of science among G&T students and improving their attitudes towards the subject. She also found that science learning needed to be active, relevant and affect students positively at an emotional level.

Why did Anthea choose to focus on extra curricular activities?

Anthea explored the research literature which suggested that one of the main determinants of positive attitudes towards science was students' experience of extra curricular activities. Anthea already arranged extra curricular science activities for the students, such as:

- visits to local universities for lectures, demonstrations and activities
- visits to local science centres
- residential courses held at universities nationally
- entry into national science competitions
- an after school chemistry club.

She felt the students gained from these activities, but wanted to monitor their impact more formally.

Why was active learning important to the G&T students?

The G&T students commented on how much they liked the fact that the extra curricular activities allowed more 'hands on' practical experience than classroom science, which tended to be more theory based. For example, following a Year 10 visit to an interactive physics workshop, 11 out of 15 students felt that their attitude towards science had improved. Students' comments revealed why they valued the practical aspects:

"I enjoyed making something we had personally designed (insulators) and then testing them to see if they worked and how much voltage they could withstand".

Why were positive emotions important for positive attitudes?

Anthea was aware how feelings of boredom and lack of challenge for gifted students can lead to negative attitudes towards science. G&T students contrasted the kind of practical work they experienced at school with the practical work they experienced out of school. They complained that

Enrichment activities can provide opportunities for the development of skills, and access to subject areas, not generally offered in the course of the standard curriculum

school experiments were often uninteresting because they were too predictable. For example, a some Year 10 G&T students pointed out that they had done the same thermal insulating investigation, for which they needed to find the insulator that would keep water hot for the longest, for three consecutive years, so they already knew exactly which the best type of insulator was.

By contrast, some Year 8 G&T students commented on how much they had enjoyed a science enrichment event at a local university where they had been given a mystery to solve that involved using chromatography and chemical tests to identify salts that had been found in a footprint. One boy stated how he had particularly enjoyed the activity because they had worked on the problem with no guidance at all from the teacher. Instead, they had followed instructions from a booklet. He disliked practical science lessons where they were shown what to do by the teacher first because he knew what would happen before he started. Discovery was therefore another essential element for keeping gifted students engaged with the subject.

Why was it important to the students that science was made relevant?

G&T students said that science lessons were more interesting, memorable and purposeful when they were related to real life. When science was related to real life the G&T students also saw how science could help their future careers and they therefore saw the value of studying science. One G&T student commented on how a teacher had made a series of lessons about health and fitness interesting by relating them to the world cup that was taking place at the time. The teacher used video clips of football matches as a basis for discussion about the science of respiration and homeostasis. Another G&T student commented that after her four-day experience of working in a university chemistry laboratory, where one of the activities had involved making paracetamol, she decided she wanted to study pharmaceuticals.

How was the study designed?

Altogether 430 students from years 7 to 12 were involved in the extra curricular science events. Anthea explored the effects this provision had on the students' attitudes towards science through student questionnaires and interviews with staff and 18 students identified by their subject teachers as gifted in science.

Find out more

Heaton, A.(2006) 'Making science sexy': raising the profile of science for G&T students. The National Academy for Gifted and Talented Youth. Available from:

http://www.nagty.ac.uk/research/practitioner_research/developing_expertise_awards_05_06.aspx

The Pupil Researcher Initiative is an exciting school enrichment project that encourages young postgraduate researchers from the scientific community to work with secondary aged pupils. Details are available at:

<http://extra.shu.ac.uk/cse/site/worked/cse/pri>

Bucking the trend - research that examines how the swing away from physics in school might be reversed:

<http://www.buckingham.ac.uk/news/newsarchive2007/ceer-bucking.html>

Panel member Justin Coad asks...

What could this research mean for you and your pupils?

Anthea's study showed how extra curricular activities enriched G&T students' learning in science and helped them to see science as interesting, purposeful and relevant.

- What extra curricular activities are taking place in your school or curriculum area to enrich gifted and talented teaching and learning? What positive experiences have these activities generated for your students?
- Have you experienced the challenge of making potentially boring topics or subjects exciting and interesting? Could you use some of the research techniques outlined above to investigate appropriate strategies to tackle these issues?
- Anthea benefited from the support of her colleagues when using research to develop and enhance the curriculum. How could you inspire and motivate your colleagues to provide you with such support?

An interview with **Anthea Heaton**

Within her role as science teacher and whole school gifted and talented co-ordinator, Anthea had identified a drop in the uptake of science at higher levels. This led her to research the issue. Undertaking a Master's degree at the time brought her into contact with a tutor from the university (Marion Jones), who acted as her mentor for this project. "Marion was really helpful at clarifying the important themes in the study". Anthea also received considerable support from her school: the senior leadership team allocated her time to carry out the research, whilst her colleagues in the science department helped by distributing questionnaires to students and supervising the extra curricular events.

Anthea felt the student interviews provided a real insight. They enabled her to rethink her teaching in the context of curriculum continuity between Year 6 and Year 7, and helped her to adapt her teaching style to a more 'discovery-based approach'. The 'spiral nature' of the science curriculum enabled Anthea to offer the G&T science students a real opportunity to establish their prior knowledge before tackling a topic and to piece together the gaps in their learning. She believes that this goes hand in hand with the 'Science for the

21st Century' curriculum. Anthea has since carried out a follow up study exploring the 'hidden talents' of 12 disaffected Year 8 boys, which convinced her that the principles of G&T teaching and learning are universal.

Anthea advises other teachers considering undertaking their own research study to "Try not to tackle anything too large; make sure it is a topic that you are interested in and is relevant to your role". Her top tips include being careful not to collect too much data, use the Internet as a source for up-to-date research, including teacher-led research.

Anthea Heaton is gifted and talented co-ordinator at Deanery C of E High School and Sixth form College, Wigan.



How might we differentiate for G&T pupils?

Keith Watson

Keith investigated whether giving G&T pupils the opportunity to voice their opinions about their experiences of teaching and the curriculum could help inform their teachers' classroom practice. He asked twelve G&T pupils from Years 4 and 5 to record their thoughts in learning logs. Their teachers also kept diaries in which they reflected on the issues and concerns they had about teaching the G&T pupils. The two teachers then identified the common themes from across the logs and used these to make changes to their teaching, such as giving the G&T pupils more extended tasks and opportunities for learning independently.

The key to in-class provision is differentiation, although research has shown that practices of differentiation via acceleration, enrichment and grouping lead to more successful learning than a single approach

What issues and concerns did the G&T pupils and their teachers raise?

The pupils' learning logs called for:

- shorter introductions to lessons because teachers go over things again and again
- a chance to sit alone because everyone chats too much
- more time to complete tasks
- carrying out science experiments without knowing in advance what will happen.

The teachers were concerned about how to ensure the G&T pupils were challenged more:

"It is hard to find the line between supporting and recapping for the SEN and the majority of the class without the able ones getting bored, and extending the able children, but without totally losing and confusing the rest of the class".

"I worry that I'm not offering them enough occasions to work more independently".

How did the teachers change their teaching?

The teachers made three main changes to their teaching:

'Cutting away earlier' – the G&T pupils sometimes took part in the whole class

introductory part of the lesson for a shorter time than the rest of the class and started on the independent work earlier. The teacher called the group back once the class had begun their work to consolidate the independent work or extend the group further. This method was used most often in mathematics. Likewise, the G&T pupils sometimes were not asked to join in with the whole class plenary, but were allowed to continue with their independent work.

More extended tasks – for example, one teacher gave her G&T pupils a week-long narrative writing task. The pupils had six and a half hours to plan, draft, edit and publish a story. She felt that the

main learning benefit of this was not so much enhanced quality, but the opportunity it gave the pupils to work independently (in particular, organising their time) and in greater depth. Comments made by the pupils supported this view:

"I am looking forward to writing something that is entirely me and not being told what to do".

"I am disappointed I did not finish. I think that I would have got nearer the end and even possibly finished if I had not spent so long on the planning stage".

Greater independence – the teachers increasingly put more and more emphasis on the pupils making decisions themselves, such as who they worked with and how they presented their work. One method of giving pupils greater independence was to challenge G&T pupils to create their own science investigation, while the rest of the class planned a science experiment together. Having planned the experiment independently, the teacher then clarified their method through questioning.

Panel member Justin Coad asks ...

What could this research mean for you and your pupils?

Keith found consulting pupils enabled the G&T pupils to take a more active role in their learning. It also helped their teachers to identify ways of differentiating through providing more extended tasks and more opportunities for working independently. Using learning logs enabled the pupils to reflect on their learning and helped the teachers gain a deeper understanding of G&T pupils.

- How could you make more use of pupil consultation to improve teaching and learning for G&T pupils in your school?
- How might you differentiate provision for your G&T pupils? Might the strategies explored by Keith, such as cutting away, offering extension tasks, and increasing independence, work in your setting?
- Asking pupils to reflect on their learning is a 'subtle art' in terms of both their responses and acting on the responses in an effective way. What techniques, including learning logs, could you use to develop and collect your pupils' responses?

What other benefits did the learning logs bring?

The teachers noted how the pupils learned to be both self-critical and reflective when writing their logs. G&T pupils wrote, for example:

“I am really enjoying my maths more because I have got much more confident with my numbers and have found a method I’m comfortable with, the column method”.

“I am writing an adventure spy story ... I am borrowing ideas from ‘The Falcon’s Malteaser’ and ‘The Blurred Man’, because I really enjoyed those books, and I hope that I am able to write a story like that, which will cause tension and really get the reader hooked in”.

The teachers also felt they gained a deeper understanding of their pupils:

“The maturity of his answers have surprised me ... He now seems to value my advice and will ask for it when he requires it and act on it, which he did not seem willing to do before”.

“The project overall has increased my awareness of able pupils, but has also made me more self critical of my teaching as I seem to be thinking of ideas retrospectively”.

How was the research designed?

Five Year 4 and seven Year 5 G&T pupils (chosen because they were on the G&T register for a variety of subjects) kept learning logs for eight months. Sometimes they wrote responses to questions put to them, and sometimes they were free to write about what they wanted related to their schooling.

Questions the pupils were asked to answer included:

- What is it like being in the G&T group?
- Does being in the G&T group help your work?
- What would make you work even better next term?
- What is it like having someone else to talk to about your work?

Keith coded the log entries into three categories: teaching methods, curriculum issues or general issues and interviewed the pupils and teachers to explore further the issues that emerged from the logs.

Find out more

Watson, K. (2006) Hearing the voice of Gifted and Talented pupils through the use of learning logs in order to improve teaching provision. The National Academy for Gifted and Talented Youth. Available from:

http://www.nagty.ac.uk/research/practitioner_research/developing_expertise_awards_05_06.aspx

GTC Research of the Month summary, ‘Consulting pupils about teaching and learning’:

http://www.gtce.org.uk/research/romtopics/rom_teachingan-learning/pupilvoice/

An interview with Keith Watson

Keith’s school seemed to be a natural environment in which to undertake a research project within the context of Gifted and Talented children because “it is a centre for excellence in teaching and learning and was the fifth primary school to win the NACE Challenge Award. It has also previously been involved in research scholarships including the Best Practice Research Scholarship scheme”.

Keith felt he really benefited from the “excellent support” given to him by Professor Jill Bourne of Southampton University, who he has worked with on different projects in the past.

Keith believes that the pupils’ learning logs were key to modifying the teaching and learning of G&T pupils. He found the anecdotal evidence they provided enlightening. Whilst the study reinforced for Keith some principles he was already aware of, he also found that the idiosyncrasies which individual pupils revealed in their journals, usefully illustrated the key message of ‘every child matters.’ He suggested this highlights both the danger of being too prescriptive in teaching and learning, and the powerful G&T strategy of negotiating learning and deadlines. He is also an advocate of assessment for learning principles. If pupils say that they feel confident about a certain idea or principle, then there must be evidence to justify this confidence.

Keith’s advice for other researchers is to be clear what the key question is and then ‘seek to ceaselessly explain’ (Lenin). “Don’t overcomplicate, strip it down to the essential questions and focus on these. Then follow what ‘the evidence obliges us to believe’”. He believes that research needs to be high on the agenda of any professional development programme and that teachers and TAs could keep in touch with research through reading and discussing it with each other.

Justin Coad has taught in three schools in Hampshire and Surrey spanning a ten-year career. Currently, he is curriculum leader of mathematics at Weydon School in Farnham, Surrey.



Keith Watson is professional tutor at Portswood Primary School, Southampton



How can collaborative problem solving develop pupils' thinking? Catherine Mclroy

Using research-based strategies, two teachers (Catherine and Peter) explored the development of inclusive programmes for all pupils

Catherine was keen to develop an inclusive teaching programme that would reach out to all pupils, not only those identified as gifted and talented. As her school had made the development of pupils' higher-order thinking skills, oracy and writing a priority, she decided to adopt an intervention strategy that would accelerate pupils' thinking in history, through collaborative problem-solving tasks. 'Cognitive Acceleration in History Education' (CACHE) was an evidence-based approach that provided enrichment and acceleration for all pupils, including those identified as gifted and talented.

The CACHE approach had a number of principles:

- **challenge** – the teacher should ensure pupils are working in an area where they are cognitively challenged
- **questioning** – pupil and teacher questioning should frame the enquiry and teacher questioning should push the enquiry on
- **authenticity** – pupils should use authentic, genuine sources where possible
- **detailed study** – the investigation should involve detailed study to enable pupils to think deeply
- **accessibility** – teaching should start from what pupils know and can do already then move quickly to what they do not know and find impossible to do without help
- **resolution and communication** – pupils should resolve the enquiry and communicate it to an audience.

Catherine introduced Year 5 and 6 pupils to a history mystery, such as, 'Archimedes and the war of Syracuse'. Year 6 pupils worked together in groups to design and make a war machine which could have been used. First they unpicked a text which explained how the city had been attacked and how Archimedes' war machines had defended the city, pooling ideas to establish that the Greeks used ropes, hooks, winches, long beams of wood, pulleys, levers, arrows, darts, grappling hooks and catapults. When the models were completed, the groups gave a practical demonstration of each model and explained the techniques and mechanisms.

Catherine found such history mysteries were ideal for developing higher-order problem-solving skills. The approach helped all pupils, including gifted and talented, to plan an investigation, look for evidence, interrogate sources, form hypotheses, question, draw conclusions, justify opinions and consider alternative points of view.

Are there other subjects in which you could develop the balance between investigation and *assimilation* just as effectively as Catherine did in history?

Find out more

Mclroy, C. (2006) History mysteries: An intervention approach for development, enhancement and acceleration of G&T pupils. The National Academy for Gifted and Talented Youth. Available from:

http://www.nagty.ac.uk/research/practitioner_research/developing_expertise_awards_05_06.aspx

History mystery resources:

<http://www.centres.ex.ac.uk/historyresource/>

An interview with Catherine Mclroy

Catherine's interest in research and evidence began with a history-related course and a Best Practice Research Scholarships (BPRS) study, which rekindled her interest in the theories behind best primary practice. "I found engaging in my own research was very refreshing and the point where I had to feed back to my peer researchers, staff and conferences, was a great challenge – at the end I was excited to realise 'I can do this!'"

Catherine is passionate about finding ways to help all children move on in their learning. She suggests: "Teachers who put themselves in the position of learners by engaging in and with research become more sympathetic to the learning needs of the children they work with."

CACHE principles continually inform her teaching: "I've tried to embed group work in all lessons and the CACHE principles are in my mind whenever I teach". But the greatest impact has been its effect upon the children's learning and achievements across the curriculum, in particular the children's increased ability to raise questions, reason and put forward hypotheses.

Catherine Mclroy

is a class teacher and history co-ordinator at St Gregory's Catholic Primary School, Smethwick



What strategies can be used for involving pupils more closely in their own learning?

Peter Riches

When an Ofsted inspection highlighted the need to improve whole school lesson planning and ensure pupil progress, especially for the more able, Peter's school decided to introduce the 'Thinking Actively in a Social Context' (TASC) Framework (researched and designed by Belle Wallace of the National Association for Able, Gifted and Talented Children) through a series of cross-curricular projects each lasting half a term. The action research involved an ongoing cycle of discussion with pupils, parents and governors, of the approach followed by trialling, evaluating and reflecting on progress as a whole school effort.

TASC gave the school an opportunity to personalise pupil learning, and develop pupils' self-evaluation and self-monitoring skills, whilst also developing their problem-solving and thinking skills. The TASC framework consisted of the following elements:

- **gather and organise** – staff concentrated on developing the pupils' questioning, research and enquiry skills, then negotiated with them the areas of the project they would develop in small groups
- **identify the task** – staff discussed and guided the pupils in their selection of aspects of the project they wanted to pursue, which gave the pupils ownership of the project. Teachers also differentiated the levels of complexity pupils could cope with
- **generate** – each class generated ideas about how they would tackle their particular tasks, how they would research and find out more, and what skills they needed
- **decide and implement** – pupils decided for themselves who they would work with and how they would share the tasks. They also planned the process and their final presentation
- **evaluate and communicate** – at various stages the pupils presented their work to each other, and exchanged constructive appraisal and criticism. They also presented their work to other classes and to parents and governors
- **learn from experience** – the children reflected on their learning, consolidated new knowledge and skills and did their forward planning.

Find out more

Riches, P. & Wallace, B. (2006) Developing a policy of inclusion with differentiation. Using TASC: Thinking Actively in a Social Context. National Teacher Research Panel. Available from: <http://www.standards.dfes.gov.uk/ntrp/publications/>

Details of the 'Thinking Actively in a Social Context' (TASC) approach: http://www.nace.co.uk/tasc/tasc_home.htm

Panel member Justin Coad asks ...

What could Peter's work mean for you and your pupils?

Having identified an area of concern, Peter worked in partnership with a national organisation to implement an evidence-based strategy to address it.

- To what extent do you employ similar strategies to those in the TASC framework? Are there aspects of the TASC framework that you now feel you would like to use?
- When developing your own initiatives, would you find it helpful to seek the advice and research expertise offered by an organisation, such as the National Association for Able, Gifted and Talented Children (NACE) or a university?
- How could you document the effects of an intervention that attempts to improve the quality of teaching and learning for G&T pupils at your school?

An interview with Peter Riches

Peter found all stakeholders in his school (parents, pupils, staff and governors) welcomed the TASC initiative. The TASC scheme is now embedded in his school and teachers feel confident enough to 'dip in' to the scheme as and when they see fit. Whilst the strategy had many benefits for all pupils, G&T pupils benefited particularly from the open-ended nature of the TASC framework.

As a consultant for NACE Peter has delivered INSET work involving TASC to a number of other schools who have responded enthusiastically. The INSET was country-wide and covered Key Stage 1 to Key Stage 3. Peter's advice for teachers wanting to use TASC in their research is to 'have a go! If, for example, a teacher was to use the TASC wheel then there is no real need to change anything in the curriculum'.

Peter Riches

is headteacher of a Lincolnshire Primary school. He has taught for nearly 30 years in a variety of schools.

Finding out for yourself: collecting the data you need

You may be considering conducting similar investigations. To help ensure you give your G&T students the support they need, we describe here some of the actual tools the teachers used to collect data. These include a lesson observation proforma, an interview schedule and questionnaire items. A well-designed study usually involves at least two different kinds of data collection.

Tools for investigating what challenges and engages G&T students in lessons

We reported on page 2 how Carolyn investigated what challenges and engages G&T students through observation (of the teachers) and structured interviews (with the students). Having identified nine G&T Year 9 students, she observed four of their lessons (maths, languages, English and ICT), to find out the strategies their teachers used for increasing challenge in their lessons, using the schedule (right) to keep the observation focused.

Carolyn also interviewed the students on three separate occasions to find out what they felt challenged and engaged them in the classroom. In the first interview, she asked them to talk about specific lessons and teachers where they felt positive about their learning experiences. The second interview focused on one of the lessons she had observed, whilst the third focused on issues specific to her own geography lessons, such as working in mixed ability groups. All the interviews comprised a series of main questions, supported by a number of probing and prompting questions. We have reproduced Carolyn's second interview schedule as an example below.

Before the interviews, Carolyn pointed out to the students that:

- the interview would be taped to allow her to focus on what the student said rather than having to make notes throughout
- anything the students said would be treated in confidence and that no teacher would find out what they had personally said
- when talking about negative experiences, the students shouldn't mention the names of teachers involved, although they could mention a teacher's name when talking about positive practice
- when the results were published they would not be specific to one subject and any examples would be anonymous
- she wanted them to feel free to be honest about giving their views of her geography lessons.

Carolyn was careful to check with the students that they were happy to take part in the interview before proceeding.

Lesson observation proforma	
Lesson Pupils observed	
Lesson starter activity.	Things to look out for: <ul style="list-style-type: none"> ■ information giving ■ closed questioning ■ open questioning ■ clear success criteria given
Main activity	Things to look for: <ul style="list-style-type: none"> ■ are the skills developed during the task low order (knowledge, comprehension, application) or high order (analysis, synthesis, evaluation)? ■ is there a timed or competitive element to the work? ■ is it group or individual work? ■ teacher input during the activity (eg. goes round asking individuals and/or groups questions)
Plenary	Things to look for: <ul style="list-style-type: none"> ■ Does metacognition take place? (Eg. are students asked to reflect on what they have done – give examples of questions)

Interview schedule (which took place after a lesson observation)	
Can you describe the lesson to me?	
Did you find the lesson challenging?	Can you explain why? Were there any other reasons?
Which activity or part of the lesson did you find the most challenging?	Can you explain why? Can you explain in more detail?
What part did the teacher play in that activity?	Can you explain exactly what they were doing? Can you explain in a little more detail?
Is there anything else you, the teacher, or other students could have done to make the lesson more challenging?	Can you explain what? Why do you think that? Were there any other reasons? Can you explain in a little more detail?
Can you describe another activity which you have done with this teacher that you have found challenging?	Can you explain why? Were there any other reasons? Can you explain in a little more detail?
Can you think about one of these activities you have told me about. Can you explain to me how you were learning during this activity?	Were there any other reasons? Why do you think that? Can you explain in a little more detail?

Tools for investigating underachievement in gifted and talented students

In Ben Rule's study (see page 4), G&T Year 8 students were paired with G&T Year 10 student coaches. The coaches held regular meetings with the younger students to enable them to reflect on their learning needs and strategies. The younger students set the agenda for these meetings and decided the issues and the coaches recorded the main points that arose in the discussions, using the framework below.

Record of coaching meetings		
Name of coach and coachee:		
Date and time		Agreed date of next meeting

Questionnaire

The coaches used the information recorded on the coaching cards to draw up a questionnaire about learning. Ben analysed both the questionnaire responses and the coaching cards to

determine and categorise reasons why G&T students underachieved. As an example, some of the items from the learning questionnaire are reproduced below.

1. How happy are you at school on a scale of 1-10? (Put a circle around the number the student says).

Miserable	Unhappy	Okay	Fine	Content	Happy					
0	1	2	3	4	5	6	7	8	9	10

2. Why have you chosen this number?

3. The school thinks that you are capable of achieving better marks and grades than most other students in your tutor group, learning group and year group. Do you agree?

4. How long do you spend on homework? (You can either say how long it takes you on an average night or how long it takes you in an average week or how long the average piece of work takes you to do).

5. What are your three most/least favourite types of work or types of activity in class?

Most	Least
■	■
■	■
■	■

6. Look at the lists in the last question, and record the things you do most/least in lessons.

7. Are there any subjects where you feel you are not doing very well? Which?

8. Here is a list of reasons why you might not be doing so well. Tick the ones you think apply to you.

- | | |
|--|---|
| <input type="checkbox"/> I can't do as well as my teachers expect me to. | <input type="checkbox"/> I really like this subject but feel that we have to study the boring bits and never get to do the really interesting bits that I like. |
| <input type="checkbox"/> The work is too hard. | <input type="checkbox"/> I find it hard to start pieces of work because I want them to be really good. |
| <input type="checkbox"/> The work is so easy that I feel frustrated and bored. | <input type="checkbox"/> I am afraid to try hard in case I get low marks because that will mean I'm not very good. |
| <input type="checkbox"/> The work is about right. | <input type="checkbox"/> In my class there are lots of people who will make fun of me if I am keen and get high marks. |
| <input type="checkbox"/> I'm happy what I'm doing. I'm just not as good at this subject as my others. | <input type="checkbox"/> Any other reasons. |
| <input type="checkbox"/> I easily remember things the teacher says and things I read in books so I don't see the point of having to write them down as well. | |
| <input type="checkbox"/> I'm given no opportunities to develop my own ideas and to be original. | |

Gifted & Talented websites

The National Academy for Gifted and Talented Youth (NAGTY)

www.nagty.ac.uk/

NAGTY's website incorporates information for students, teachers/education professionals and parents. Divided into three main sections, the 'Professional Academy' section includes guidance and information on SIPs, Quality Assurance, national policies as well as free online CPD modules called 'G&T in a Nutshell'. Each

module takes 20 minutes to complete and provides a basic introduction to key topics and issues in gifted and talented education. In the 'Research Programme' section you can download the whole range of academic research papers about G&T policy and practice as well as case studies carried out by teachers. In the 'Student Academy' there are specialist resources for G&T students including *Aspire* (the members magazine) and *ACHIEVE* (careers information). This section also details



various fun and stimulating courses for G&T students in a wide range of topics not usually covered in schools.



Oxford Brookes University: Gifted and talented Professional Development

www.brookes.ac.uk/schools/education/rescon/cpdgifted/cpdmatsguide.html

On the Oxford Brookes G&T professional development website, you'll find materials adapted from the Excellence in Cities (EiC) National Development programme for G&T coordinators. Although the EiC initiative is aimed at schools in areas of economic, social and educational deprivation, much of the information and recommended practice for G&T

provision is relevant to all schools. You'll find the materials give a helpful overview of the issues in identifying and providing for able G&T pupils. The website also houses a series of briefing documents called 'launchpads' which look at specific aspects of G&T education, such as thinking skills and mentoring, as well as links to a variety of G&T support websites for students aged 14-19 years.

Teachernet: G&T wise

www.teachernet.gov.uk/gtwise

You'll find the answers to all kinds of questions you might have about teaching gifted and talented students on the Teachernet's G&T wise website, such as:

- How do I identify gifted students?
- How do you include material for G&T students in a scheme of work?
- Where can I find guidance on teaching G&T students at KS5?
- Where can I find out more about personalised learning and G&T in primary education?
- How can I help my G&T students use ICT more effectively?
- Where can I find good books on G&T education?
- Where can I get help formulating whole-school policy on G&T teaching?



Brunel Able Children's Education (BACE) Centre

www.brunel.ac.uk/about/acad/sse/sseres/sseresearchcentres/bacehome

The BACE centre offers professional development courses for teachers on effective provision for higher ability pupils. It also identifies research evidence to help increase understanding of able children and their needs. The centre operates an

'Urban Scholars' programme. Pupils from urban areas of social disadvantage are offered access to a study centre. The four-year programme is designed to help very able pupils achieve the high grades in their public examinations they need to obtain places at universities and subsequently enter professions which members of their families haven't previously considered.