

# GATSBY TEACHER FELLOWSHIPS



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The Gatsby Teacher Fellowships (GTF) programme was established to identify teachers of mathematics, science and design and technology who can make a significant contribution to the effective and inspirational teaching of their subject.

This booklet provides an overview of the fellowships completed during the academic year 2004-2005, as well as describing the projects being carried out by the 2005-2006 cohort of fellows.

The fellowships are normally for one year and provide an honorarium and support funding to allow the holder of the award to carry out innovative curriculum development and, where appropriate, gain further professional qualifications. An active and growing network of fellows has also been established.

The Gatsby Teacher Fellowships programme is administered by the Gatsby Technical Education Projects and is funded by the Gatsby Charitable Foundation, one of the Sainsbury Family Charitable Trusts.

For further information on the fellowships, and to find out how to apply for one, please visit the website **[www.gtf.org.uk](http://www.gtf.org.uk)**

or contact:

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For more information on GTEP's other programmes please look at **[www.gtep.co.uk](http://www.gtep.co.uk)**

# Andrew Blair

2004-2005 Mathematics Fellow  
Mathematics Teacher  
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## **My fellowship was about developing an inquiry method of teaching mathematics and trying out a number of prompts that acted as stimuli to inquiry in the classroom.**

The prompts were trialled with students from years 7 to 11 and with all ability levels. The fellowship was also about disseminating the results with other maths teachers and to a wider audience and discussing the pedagogical ideas behind what I came to call Guided Inquiry.

The project was part of a development in my interest in how students learn to monitor and regulate their own thinking in dialogic inquiry. It came from a belief that students cannot be expected to think metacognitively if teachers structure lessons in an inflexible way and if students are not allowed to negotiate over classroom activities. The achievements occurred at two levels: firstly, the theoretical ideas behind Guided Inquiry are now firmly established and the prompts have been successfully used in 'natural' settings; and secondly, my presentation of the inquiry method to different audiences of teachers has led many to reflect on their own practice in relation to the KS3 strategy. I also wrote and distributed a booklet on Guided Inquiry with lesson and mathematical notes for teachers.

The funding was spent in three main ways. Firstly, I funded a Masters level course (60 credits) during which I researched Guided Inquiry by analysing transcripts of classroom dialogue (in comparison to National Numeracy Strategy lessons). Secondly, the funding covered supply costs for other teachers to observe Guided Inquiry lessons and for me to be released to talk about and discuss the approach in different forums. Lastly, the funding was used to buy resources and to produce a booklet for other practitioners.

# Damian Parker

2004-2005 Design and Technology Fellow  
Design Technology Teacher  
St Cyres School, Cardiff  
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**The plan for my project was firstly to design and make a range of teaching resources that will enable pupils of all abilities to use the 'Smart Card' programmer to obtain various outcomes, and secondly to produce a teaching resource that will be used to help pupils understand 'Smart Card' technology and to guide them through the worksheets that would accompany the kits.**

The resource provides an excellent link between the computer control work that we were already completing in year 8 with the 'IQ' controller and the 'chip factory' work that the year 10 systems and control group were completing. This also increases their awareness of computer control and the link with the systems and control subject.

The Gatsby fellowship allowed me to produce a valuable resource for the department that has been used in KS3 and KS4. The support and guidance given throughout the year has been useful to my everyday teaching as well as my fellowship work. TEP in particular have been a great help for us in developing new and exciting projects at KS3.

The funding that I received allowed me to purchase a data projector and create enough teaching boards to adequately teach a class of thirty pupils.

Pupils using the smart boards in their lessons.



# Natalie Griffiths

2004-2005 Design and Technology Fellow  
Head of Technology, Cottingham High School  
East Riding of Yorkshire  
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**My project involved researching gender difference issues within the design and technology workshop. I used documentation, experience and input from colleagues to research the possible reasons for gender difference; I used a survey and filmed lessons to observe and identify trends which could affect the achievement of boys and girls in the design and technology workshop; I proposed strategies that could be used to overcome these issues then filmed lessons once again to judge effectiveness. The final outcome is a website (currently in development) although paper-based outcomes are also available.**

I have always had an interest in gender issues due to my experiences of being the only female student undertaking an engineering qualification and design and technology teaching degree, and then pursuing a career within the traditionally 'male' subjects within design and technology. I undertook a Masters degree and chose gender as a focus for my dissertation and, when the opportunity to apply for a Gatsby fellowship arose, took that opportunity to supplement my MSc requirements. In reality undertaking a fellowship project has resulted in much more than that. Outcomes included making valuable professional and personal contacts; being able to purchase valuable resources for my school and developing many skills including the use of new media technology; developing notoriety amongst colleagues and nationally; and also the satisfaction and gratification that results from recognition of my hard work and efforts.



Pupils proud of their end results.

# Anthea Heaton

2003-2005 Science Fellow  
Science Teacher  
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**My Gatsby teacher fellowship project ran over two years and focussed on improving the transition between KS2 and KS3 science. During the two years the project has evolved and the emphasis now is on monitoring pupil progress within this subject area as they move through KS3.**

I chose this project due to my involvement in primary liaison, and through the Gatsby teacher fellowship the science 'Passport to Progress' has been produced. This is issued to all pupils as they begin year 7, allowing them to monitor their own progress and work towards personal targets. Being a Gatsby teacher fellow has led to personal professional development. The work as a fellow has contributed to my studies for a Masters in Education and I have been asked to speak at a transition conference. In addition, I have also received a 'Developing Expertise Award' from the National Academy for Gifted and Talented Youth to carry out research into gifted and talented education in the area of science.

The funding received from Gatsby was used in several ways. Some of the funding was used to provide time to carry out primary visits and to develop the science 'Passport to Progress'. The rest of the funding was used to purchase resources to enable me to carry out the project, for instance a colour printer, files for each pupil, printing for the pages of the passport and stickers to record progress.

Pupils monitoring the temperature of liquids during a science experiment.



# Carolyn Bryan

2005-2006 Design and Technology Fellow  
Primary Teacher and Design and Technology Co-ordinator  
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**The aim of my fellowship project is to compile a pack for teachers who would like to run an after school technology club for junior aged children. The pack will consist of teacher notes, student information, and illustrated activities on themes that introduce simple engineering challenges to young children.**

I have successfully run Young Engineers clubs as an after school activity for the last six years and am always keen to get other teachers interested. The usual response is that they don't know what to do with the children and need ideas. Presently, the Young Engineers organisation supports a network of clubs and produces challenges for students to take part in but do not provide other activities for clubs on a weekly basis. I hope this project will provide the starting point to get more clubs off the ground and get more young children interested in science, technology and engineering.

My fellowship funding will mainly provide supply cover so that I can have time out of class on a regular basis. I have planned to use the time to collect information and plan and write the activity pack. I have also arranged to meet with other club leaders and visit appropriate venues relevant to my project.



Pupils having fun launching a rocket during an after school technology club session.

# Sandra Clinton

2004-2005 Science Fellow

Chemistry Teacher

Brighton Hove and Sussex Sixth Form College, East Sussex

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**I spent my fellowship year writing resources for teaching AS and A-level chemistry using interactive whiteboards. The resources were made available for all teachers via a website written as part of the project.**

I chose the project from my interest in the use of ICT to support chemistry teaching and partly out of frustration at the lack of resources commercially available that are suitable for post-16 study. I achieved a complete set of resources for key topics in AS and A2 chemistry, wrote a website through which the resources can be accessed along with guidelines for their use in the classroom. Along with my colleagues and our students, I gained a great deal from participating in the project. We had a combined focus on the use of the interactive whiteboard, everybody evaluated their own learning and the effect of these resources on learning. My relationships with students were strengthened, the department gained expertise and materials to use in our teaching, and the students had a greater understanding of the difficult concepts encountered in an A-level course.

My funding was spent on training in using Dreamweaver for writing websites, a database of images to use with the interactive whiteboard, data input devices such as graphics tablets and remote slide, a digital camera and producing a CD of resources that was sent to our feeder schools.

A-level chemistry students benefiting from using the interactive whiteboards.



# Joanna Postlethwaite

2004-2005 Design and Technology Fellow  
Head of KS3 Design Technology, The Castle School, Bristol  
now Head of Food and Textiles, John Cabot CTC, Bristol  
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**My fellowship project was about improving the attitude and attainment of year 9 boys in textiles. I wanted to try and encourage more boys to enjoy textiles and break down some of the stereotypes of textiles being a subject just for girls. I trialled teaching single gender classes in year 9.**

I have always been passionate about my subject and for a long time have enjoyed excellent results at both GCSE and A-level with girls that opt for textiles. Year 9 has always been a difficult year with pupils opting for GCSE options and seemingly deciding to no longer bother in subjects they are not going to continue with such as textiles. My project enabled me to not only raise the pupils' attainment levels considerably but also to improve my working relationship with boys in year 9 and foster a feeling that actually textiles could be quite fun!

I spent my funding on a whole variety of things from extra resources to use in my lessons such as glow in the dark paints and UV reactive threads, new scissors, a digital camera and printer to a computerised sewing machine and lots of new resource books.



Pupils using TEP resources in their D&T lesson.

# Jeff Gillen

2004-2005 Design and Technology Fellow  
Head of Design and Technology, Wolgarston High School, South  
Staffordshire – now Assistant Head Teacher at Park Hall School, Solihull  
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**My project was about teaching CAD/CAM skills in KS3 in order to give students the knowledge and confidence they need to use CAD/CAM effectively in KS4.**

I chose this project because I wanted to improve the quality of 2-D and 3-D outcomes in KS3 and to develop teaching resources in this area. As I taught in a middle school system I also wanted to work with feeder schools to ensure consistency across KS3 and KS4. I also wished to change and modernize the image of design and technology in middle schools and high schools.

I have produced resources which I have been able to introduce into my new school. I have also improved my CAD/CAM, general IT and presentation skills.

My fellowship funding was mainly spent on supply cover (to free me up to write materials) and software and consumables for realisation of the 3-D outcomes.

Mobile phone holders  
produced by students using  
CAD/CAM.



# Lynda Dunlop

2004-2005 Science Fellow  
Chemistry and Physics Teacher, The Grove College, East Sussex  
now The Lancaster School, Mexico City  
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**Astronomy is an increasingly popular subject at GCSE level, and one with enormous potential to engage students in some difficult physics in an interactive and practical way.**

During my Gatsby fellowship year, I created a scheme of work for teaching GCSE astronomy. This is available on CD-ROM by contacting me, or by visiting the association for astronomy education website ([www.aae.org.uk](http://www.aae.org.uk)). I have tried to create resources or highlight activities that cater for a variety of learning styles, incorporate the use of ICT and provide opportunity for discovery learning and assessment. I am a chemist by training and became interested in astronomy when a couple of students asked me to teach them GCSE astronomy after school. The Gatsby teacher fellowship provided an opportunity to enhance my own subject knowledge and pedagogy, and to provide more engaging resources for students.

During the year, I used fellowship funding to provide supply cover (to allow me to attend conferences, and to work on the resources), buy books, a computer and astronomy software, observation equipment (including time on research grade telescopes), invite astronomers to speak, and to lead excursions with students. Students commented that they loved the activities we did in astronomy, and as a result, astronomy classes were great fun for all of us!



Pupil using 'm&ms' to understand astronomy.

# Trish Colley

2005-2006 Design and Technology Fellow  
Design and Technology Teacher with responsibility for Primary Liaison  
in Design and Technology, Beverley High School, East Yorkshire  
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**The project I am working on is a series of transition units for the seven feeder primaries that I work with. This includes a unit on fairgrounds, silk painting and one on rockets that incorporates skills in design and technology, science and maths.**

I have chosen this project to develop further work I have been doing with our primaries and to disseminate the materials further using the East Riding of Yorkshire's education website ([www.eriding.net](http://www.eriding.net)). I hope to provide a pack of resources for teachers of year 6 to use that are challenging, exciting but very straightforward to use.

I intend to spend my fellowship funding on digital media to enable me to make a DVD of moving fairground rides and for purchasing some valuable time off-timetable to develop these materials.

Pupils using a fairground model to improve their design and technology skills.



# Tracey Coleman

2005-2006 Science Fellow

Science Teacher

Sexey's school, Somerset

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I am looking at how we organise pupils into groups and how we can improve the effectiveness of group work, by assigning pupils roles within a group. This should give every pupil a role, which matches their personal strengths – avoiding the 'one person left on the sidelines'. It also allows pupils to appreciate the contributions made by every member of the team. Further work will look at how we can extend pupils into roles they need to develop, by pairing them up with a mentor (someone who has the role as a strength).

The idea came from industry where 'Belbin team roles' are often reviewed for team effectiveness. Time allowing, I may develop the project to consider how we assess pupils' work in groups and how much peer assessment should contribute to this.

The funding will enable me to provide materials to support the project and time out for me to either visit other schools or to work on the project.



# Jonny Griffiths

2005-2006 Mathematics Fellow  
A-level Mathematics Teacher  
Paston College, Norfolk  
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**My fellowship is concerned with Rich Starting Points (or 'risps') for A-level mathematics. The project is focused on the creation of open-ended, investigational, problem-solving activities that provide a direct path into syllabus topics.**

I really enjoy writing original material for my classroom, and my experimentation with this in previous years has led to a certain amount of success. By the end of this fellowship year I hope to have arrived at a set of activities and a methodology that any A-level maths teacher would find helpful.

I will spend my fellowship funding on a projector, a laptop and software and INSET.

A-level students  
investigating geometry.



# Lyndsy Newton

2005-2006 Science Fellow  
KS3 and KS4 Science Teacher  
Greenbank High School, Southport  
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**The aim of my fellowship project is to produce a set of assessment for learning resources to be used at KS3 with the QCA scheme of work. These resources will include self assessment activities to be used at the start of a topic to determine prior knowledge and inform planning. Also included will be peer assessed activities and some ICT resources.**

I feel that assessment for learning is an important tool for both teachers and pupils and whilst I am aware of the many demands placed on teachers, I don't want it to become 'another one of those things that we have to fit into lessons'. I hope that my project will provide me with a better understanding of assessment for learning and allow me to produce a set of resources that can be easily integrated into lessons with the maximum benefit to those involved.

Funding will be used for relevant INSET and supply cover for INSET, research materials, consumables, equipment and materials for producing activity packs and for additional supply cover for assessing and evaluating etc.



Pupils using traffic light cards as a self assessment tool.

# Alan Slater

2005-2006 Mathematics Fellow  
Mathematics Teacher  
Gosford Hill School, Oxfordshire  
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**The aim of my fellowship project is to design, develop and deliver a set of interactive resources called 'READY to GO' that can be used as interactive maths starters for KS3.**

The start of any lesson is crucial to its success. Government figures published in 2004 show that over 80% of secondary schools have electronic whiteboards, but they are not being used to their full extent. The idea here is to produce a collection of materials 'READY to GO' that are suitable for lesson starters in KS3 mathematics.

There are many things I hope to achieve from this project:

- rich ideas and engagement from students about the characteristics of an attractive lesson starter for them
- an even larger network of colleagues willing to share their starters
- enhanced personal skills in designing and developing material
- professional insight and experience in presenting some of this work to a wider audience (e.g. in schools, at conferences)
- ongoing improvements and additions to the "READY to GO" material

The cost of this exciting 'READY to GO' project includes administration, materials, postage, teacher time, supply cover, student time (book tokens) for designing, developing, piloting the materials, an active dissemination program, handling constructive feedback, attendance at conferences and seminars.

# Pan Panayiotou

2005-2006 Design and Technology Fellow  
Design and Technology Teacher  
Ash Manor School, Surrey  
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**I chose to do this project because I became frustrated at the lack of materials that can be used in the classroom to enable students to understand the design process.**

The objective of this project is to produce an interactive DVD guide for KS4/5 pupils and teachers, when involved in design project work. The James Dyson Foundation has also agreed to support the project and its filming. The idea behind the DVD is to produce a piece of software that uses designers/manufacturers to lead students through the design process. By using designers who comment on how they tackle the problems associated with their work, the DVD will show that the design process which pupils go through is exactly the same.

I plan to spend my funding on a computer upgrade and editing equipment, the production of an interactive DVD, materials and supply cover costs to allow for school/industry visits.



Students involved in 'design process' analysis work.

# Simon Walker

2005-2006 Mathematics Fellow  
Primary Mathematics Teacher  
Birdwell Primary School, Barnsley  
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**My fellowship project is about peer mentoring in mathematics. This involves year 6 children with a secure knowledge in maths using computer software with higher ability year 4 children to further their knowledge. Following mentor training and maths teaching, the older children consolidate their appreciation of concepts by working with the younger ones to extend their understanding.**

I identified from our tracking system a need to cater more appropriately for our higher ability mathematicians in year 4 whilst providing opportunities for practice and consolidation for year 6. A pilot project demonstrated that success was possible by developing a system which allowed the two groups of children to work together in partnership, which relates to our school values of creating partnerships and collaboration.

I aim to spend the money on appropriate software resources with which the children can engage, quality learning journals and stationery for them to record their learning and to buy time for me to work with and observe the children working together.

Pupils using the new computer software during a maths lesson.



# Richard Spencer

2005-2006 Science Fellow  
Head of Biology  
Bede Sixth Form College, Teesside  
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## **My fellowship project involves the creation of resources to develop synoptic skills in students studying A-level science.**

The aim of the project is to write three booklets which link different topic areas under theme headings. 'Circle of Life' is themed around nitrogen and brings together areas such as amino acids, biuret test, protein synthesis, kidney function, pollution and gene technology. "Bewitched" is themed around cystic fibrosis and "All to Pot" is themed around cannabis.

A2 students find it difficult to prepare for synoptic exams at the end of the A-level course. The resources will help revise topics from previous units (they will incorporate some fun ways such as songs, dances and tours) and they will give students practice at drawing together ideas and concepts from different areas of science. The resources are not just about knowledge and understanding; they will also give the students opportunities to develop higher order skills such as data analysis, application of knowledge and synthesis.

Funding will be used to purchase a dedicated computer and printer to produce written materials, a DVD camcorder and camera to make a visual record of progress of the project.

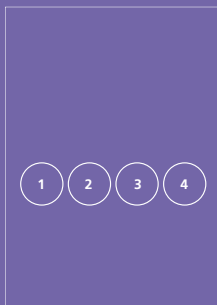


DNA Replication – a new dance developed as part of the project! The picture shows students forming the DNA double helix and doing hydrogen bonding actions.

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- 1** A-level students investigating geometry, Paston College, Norfolk
- 2** Pupil demonstrating her design and technology skills in the workshop, Cottingham High School, East Riding of Yorkshire
- 3** Pupils having fun launching a rocket during an after school technology club session, Uplands Junior School, Wolverhampton
- 4** Pupils monitoring the temperature of liquids during a science experiment, Deanery CE High School, Wigan