



**The Scottish Parliament's Education Committee Pupil Motivation Inquiry  
Call for Evidence**

**Submission of Evidence: February 2005**

NESTA  
Fishmongers' Chambers  
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## 1. Background

NESTA – the National Endowment for Science, Technology and the Arts – was established by the National Lottery Act 1998 to pioneer ways of supporting and promoting talent, innovation and creativity in science, technology and the arts. We do this primarily through our four core programmes – Learning, Fellowship, Creative Pioneer and Invention and Innovation, as well as NESTA Futurelab. To date we have made over 640 awards through these programmes and invested over £33 million in supporting creativity and talent across the UK.

Through our funding programmes we help turn ground-breaking ideas into innovative products, services or techniques; we support the creative development of individual scientists and artists; and we invest in new ways of delivering education to young people both in and out of school. Through NESTA Futurelab, we work to use new technology to improve teaching and learning.

Moving forward, we are building on the knowledge gained from these activities and making sure that the lessons learned inform the development of policy and practice across the areas of our remit, in order to make the UK environment better for the people NESTA was set up to help.

Against this background we welcome the opportunity to respond to this call for evidence. In offering evidence to this inquiry NESTA will not attempt to discuss all of the questions being raised. Rather, we will restrict our responses to those areas into which our experience provides an insight.

## 2. Factors that have a positive or negative impact on pupils' motivation

NESTA's Learning programme specifically supports innovative new approaches to teaching and learning, with the aim of providing models for others to follow and to foster creative ability in science, technology and the arts. Since the Learning programme opened in 1999, we have supported more than 140 pilot projects with over £12m. The following factors have been mentioned, in evaluation reports, as positive indicators for pupils' enthusiasm, motivation and creativity:

- Opportunities for teamwork amongst students – to support and challenge each other – and also between teachers and pupils.
- Bringing in external expertise to expand the learning experience.
- Opportunities to talk to / present findings to highly-regarded experts in a particular field (e.g. scientists, roboteers, mathematicians, authors).
- Exposure to engaging and authentic role models to increase students' enjoyment of science subjects.
- The experience of going into a University setting, or working with students and researchers from Universities, opening their eyes to another world of learning, beyond school.
- Having their work displayed alongside the work of professional artists.
- Use of video conferencing applications.
- The "fame" of seeing themselves on screen.
- Use of the internet as a research tool.
- Perception of stepping outside the core curriculum to do something fun from the "real world".
- Manufacturing or making a "real" product e.g. robots for local business use.
- Capacity to effect real change i.e. to have impact beyond the classroom, or to be involved and influential in future action.
- Role play as a way to release true emotions and feelings, in a safe environment.
- Enhanced enthusiasm of teachers and headteachers about a novel approach, creating a new buzz about the school.
- Being treated as a peer rather than a student.
- Using a range of learning modes, so that all students have the opportunity to develop their strengths and address their learning needs.

### 3. Examples of best practice from Scotland and other countries and Examples of effective teaching approaches, learning styles and personalised learning that have a motivating influence for disaffected pupils

We have selected the following projects from our portfolio because of their relevance to young people and because motivation has emerged as a key element in the project evaluation. Some of the projects have been piloted specifically in Scotland, while others have been targeted in other parts of the UK or have UK-wide relevance. More information on all of these projects, and others we have supported, can be found on our website ([www.nesta.org.uk/ourawardees](http://www.nesta.org.uk/ourawardees)).

#### Models which piloted different ways to give pupils contact with external experts:

**Motivate.** A project using video conferencing and internet technology to give school students contact with brilliant mathematicians. The project aims to inspire pupils to enjoy and get more out of their maths lessons and develop teamwork skills.

**Inspire.** Individuals with exceptional talent in science or the arts help to inspire others through outreach projects across schools, colleges and communities. Feedback from pupils at Bruntsfield Primary School in Edinburgh included this:  
*"We thought it was really cool working with Harry Kroto, he was really smart. He knew lots of interesting things... we had never met a scientist before."*

**Adopt-an-Author.** This Brighton Festival project brings children in touch with popular writers. After a successful pilot run in Brighton, the scheme is expanding across five further English regions to reach a potential 900 pupils.

**CapeUK.** The *Creative Space* project experimented with new approaches to science teaching in school. Pupils at secondary and primary schools across Leeds and Manchester worked in a long-term collaboration with teams of teachers, research scientists and creative practitioners to create a mental space for exploration, make time within a crowded curriculum, and design stimulating installations and environments. The aim was to see what difference this collaborative approach to science teaching would make to students' motivation, behaviour and science understanding. Feedback included:

*"It's been a real area of success for him because he does struggle with the curriculum and he does struggle with his behaviour, and staff came in to see him in this situation where he was taking control of something, because they've not seen it before." (Deputy Headteacher)*  
*"Most people at the beginning of the year were bored, weren't they? But now everybody is actually doing the work and getting more excited... and we might be talking, getting on the teacher's nerves, but we're actually talking about science..." (Secondary pupil)*

**The Samling Foundation.** A public art initiative, *Arena*, in which Angel of the North sculptor Antony Gormley worked with five young professional artists and 60 gifted A-level students to produce new work and challenge current international debate about what constitutes public space. The independent evaluation report stated that:

*"Students have gained confidence to experiment in different mediums and confidence in talking about their work. The project has encouraged students to think independently and given them the opportunity to work outside the confines of the classroom."*

#### Models which use technology to engage with young people:

**Planet Jemma.** A 14-part interactive online drama – running over 6 months – about the life, loves and university career of a young first-year physics student, Jemma, to encourage more teenage girls to consider science-related courses and careers. The Planet Jemma website has over 30,000 subscribers, received over 6000 text messages and tens of thousands of emails. One user said:

*"Dear Jemma, I am writing to you to tell you that your aim has worked (well on me at least) as before science seemed the most dull thing ever, but after watching and reading about your life, my mind has changed. It's easy to see that a good social life, fun and intellect has*

*come out of science. I'm positive, that you will have made a big effect on other girls about physics."*

**Artswork.** The *Future Something* programme nurtures young people's creative desires, combining new technologies with traditional concepts of professional apprenticeships and giving highly disadvantaged teenagers the chance to flex their creative muscles.

*"One of the striking perceptions afforded by intermittent visits to the developing project is the degree to which changes have been brought about: a group of yet to be fully convinced individuals in September has become a more unified cohort, relatively focused and committed to a shared and commonly understood set of goals."* (NESTA mentor)

**Dream Ireland.** A company whose aim is to assist the growth of the digital and creative industries within Northern Ireland. Their pioneering Dreamlab Generation project is teaching digital technology and insider knowledge of the creative industries to schoolchildren.

*John arrived in DHS from a local sec school into 6th form. I was unaware of the very high skill level he possess, but I was willing to encourage him to achieve to his full potential. John completed 2 of his ASC work pieces using work completed in class and Dreamlab. John achieved 300/300 and obviously a top A grade. During the show case Johns work was noticed by a number of professionals and as you know was offered work. John would like to achieve formal qualifications and is currently making applications to a range of universities.*

**Hi8us.** A cutting-edge project at the convergence of internet, education and television drama, aiming to develop the emerging talent of young people – especially those at risk of social exclusion – as performers, writers, producers and web developers. The pilot projects were carried out in schools and the wider community.

#### Models which develop opportunities for learning outside the classroom

**Room 13.** Pupils at Caol Primary School near Fort William, aged 8-11 years, run Room 13 as an autonomous arts studio. Pupils at the school are free to leave their lessons whenever they wish – providing their classwork is up-to-date - to go to Room 13. There they work with artists-in-residence to create artworks of such imagination and sophistication that they were the sensations of the Barbie Art Prize, the children's version of the Turner Prize. NESTA's support is enabling the pupils to start the task of developing further Room 13s in other schools.

**AccessArt.** A skateboard park may seem an unlikely place for learning. But it could soon be offering pupils one of their most effective lessons yet. Artists and educators are piloting a scheme to enable teenagers to learn through seeing and doing. Their ambition is to inform curriculum policy with a new resource promoting the development of young people's creative, visual and spatial skills through physical and virtual exploration.

*"I used the ideas in the worksheet very successfully with a group of Yr7 & 8 boys in English. We are working on a combined Art & English project on Cats. Being an EBD school many pupils have missed out on basic education in literacy and have very limited vocabularies, particularly descriptive, imaginative words and building pictures. The exercise, especially when they had a piece of fur fabric to hold, produced some sincere original results which pleased everybody, and has really taken off as a visualisation method. Thankyou!"*

**Planet Science Outreach projects.** Science Year and Planet Science were initiatives managed by NESTA for the DfES. As a follow-up activity, the DfES funded NESTA to design a programme specifically aimed at schools that had been less effectively engaged by Science Year and Planet Science, and had low levels of attainment in science. One of the 6 main stage projects was 'Enhancing Pupil Motivation', led by the Institute of Education, London. Beginning Teachers from their PGCE science course were used to support science education projects in schools, to explore how embedding an appreciation of the value of outreach work in new teachers might play a part in developing the long-term use of outreach activities.

**Young Foresight.** A London-based charity aiming to stimulate young people's creativity in Year 9 (equivalent to S2) design and technology classes, has devised a TV competition in which teams of school children compete to create a product or service for the future.

*"The students...were excited by the focus on the future, which gave them a feeling of intellectual freedom. The students took pride in their achievements and the Programme altered the way they saw themselves and school. This was particularly the case with students who found school difficult. The progress made by these students was notable. One such student commented: 'It's really shown me what I can achieve, and in a group as well.'"*

**Scottish Executive Science Small Grants scheme.** A pioneering scheme to support the transition of pupils from primary to secondary school science – a time when many lose interest in the subject. Clusters of schools are encouraged, with support from NESTA, to develop innovative ideas and apply for grants ranging from £500 to £2,500. We received this feedback in relation to an award to establish a science club for S1-S2 pupils:

*"One of the most significant features of the club is the mix of ages, abilities and backgrounds. During one robotics session that I observed, the teams were an unusual mixture of pupils with some frequently troublesome and less able pupils working with our more able and already motivated pupils. These were self-chosen teams - not selected by the teachers."*  
(Headteacher, Gracemount School, Edinburgh)

#### **4. Examples of approaches which ensure that vocational training and alternative curriculum experiences are recognised and valued appropriately.**

One pilot project - **Roboteers in Residence** – involved 5 colleges across the UK (including Kirkcaldy Institute of Applied Technology) and gave students aged 15 to 20 years a unique opportunity to work with master robot makers in a practical, hands-on way. One student was able to submit his project as part of his Higher National Diploma casework. He was so inspired by his experience working with the Roboteer, that he subsequently sought and gained a place on a University Honours degree course in Mechatronics. Among his comments, is the simple, telling, endorsement that the Roboteer will *"never be forgotten"*.

#### **5. The effectiveness of existing networks and structures for communicating examples of best practice.**

One effective network that has emerged from Science Year is the **Planet Science newsletter**. This is sent by email each Friday afternoon to over 13,000 subscribers, around two-thirds of whom are thought to be teachers. The friendly, concise style of the newsletter matches that on the **Planet Science website** ([www.planet-science.com](http://www.planet-science.com)) and feedback from teachers suggests that both the website and the newsletter are an effective means of disseminating best practice on motivational and other issues in science education.

NESTA is committed to disseminating new models and ideas from the projects that it has supported, and acting as a catalyst for the capture and transfer of new knowledge to key groups in education to have a system wide impact. To this end we convene meetings of stakeholders, such as the one involving the Royal Society, Scottish Scientific Advisory Committee, the BA and science education policymakers from DfES and the Scottish Executive, to discuss science education in the context of the UK Government's 10 year science strategy.

NESTA will continue to act as a hub around which debates in science, technology as the arts coalesce, informed by the learning from our projects, and will offer further evidence or other assistance in keeping with its remit, to the Scottish Parliament's Education Committee or other partners as such opportunities arise.

#### **For further information, please contact:**

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