SSAT inquire inspire innovate impact

Innovation by schools, for schools
Some outcomes and their value

Report on SSAT (The Schools Network)
Innovation Fellows' action research

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SSAT is a membership organisation and the hub of the largest, longest-standing education network in England.

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Executive summary

The Innovation Fellows (IF) programme run by SSAT (The Schools Network) has supported practitioner-led innovation in pedagogy, using collaborative work with new technologies and project-based learning to enhance students' learning experiences. This report on their work and its medium-term outcomes follows an interim report in May 2011.

Why was this programme initiated? Because a number of important technical and social developments with significant implications for education have yet to be widely or fully implemented in schools. These include:

- releasing the talents of generation Y teachers (those born between the mid 1970s and the mid 1990s)
- new types of continuing professional development (CPD) with the potential for deeper and more far-reaching impact on teachers and students
- a widespread concern that many new electronic technologies had not influenced pedagogy as much as has been predicted.

This action research programme has involved 19 fellows from schools and colleges in England and Wales seconded to SSAT for one day a week during the academic year 2009-10. It also extended well beyond that: as this publication will demonstrate, more than three-quarters of the fellows have been promoted or had their roles in/beyond school enhanced; and the vast majority of them are continuing to develop and disseminate the work begun in their projects.

Their work focused on four key and interdependent areas. These are described below with their outcomes, followed by the learnings that have resulted from them, for school leaders, for practitioners and ultimately for students. Finally in this summary, there are sections on the difficulties faced in this process and the next steps now being pursued.

1. How schools use web 2.0 to improve teaching and learning

The innovation fellows in this group found a wide range of positive outcomes from applying interactive technologies for collaborative teaching and learning, using wikis, YouTube and other social internet technologies. The technologies enabled students to work together and interact easily about their schoolwork with each other and with their teachers.

Web 2.0: why is it important to educators?

The term web 2.0 describes applications on the World Wide Web that allow interactive information sharing and [management], user-centred design and collaboration. Examples include web-based communities, hosted services, web applications, social networking sites, video-sharing sites, wikis and blogs.

A web 2.0 site allows its users to interact with other users and to change website content, in contrast to non-interactive websites where users are limited to passively viewing information.

So web 2.0 enables educators and learners to interact and co-construct content – to communicate, collaborate and create – from their computers.

From *Innovation by schools, for schools*, SSAT 2010

There were marked improvements in academic results in a number of the student groups adopting the approach compared with their peers, though it would be hard to prove this was entirely due to the innovation fellows' projects. The main benefits seen were in qualitative factors:

- student engagement and attitudes improved
- staff engagement increased
- sharing expertise with other innovation fellows promoted rapid and effective change
- the web 2.0 technologies increased personalisation of learning, for both staff and students
- the innovation fellows used their freedom to innovate and for self-direction to explore new ideas
- working outside the fellows' personal comfort zones at times contributed to the speed of learning and reinforced the teamwork ethic
- the competition between fellows that arose from this structure increased productivity
- researching and using technology allowed each team member to progress their own learning, as well as that of their students and their schools.

2. How students can become more active in running their schools and implementing new practices in learning

This group of fellows investigated and applied the use of new technologies to enhance and strengthen not only learning but also student voice within their schools, and beyond.

Some of the six schools' student representatives were fully engaged in the research from the start. They used the social networking engine Elgg (http://elgg.org) to document their experiences, which included peer teaching and work with primary school students on safe social networking. The schools are also using the Elgg to conduct Inset for teachers. Yet it is often students who monitor and police the Elgg's use, and encourage ownership of their own learning – evidence that students are taking on more leadership roles. As one teacher commented: 'Teachers can use the Elgg, but it's the students who own it.'

At another school, St James in Exeter, users of the school's social network increased from 332 in early 2010 to 755 (including 88% of the school's students) a year later. In the same period, discussion topics rose from 55 to nearly 500, and links to useful resources from 24 to 257.

All the innovation fellows, and very many of their colleagues and school partners, have found these innovations have engaged both students and staff in their schools and beyond.

'Teachers can use the Elgg, but it's the students who own it.'

Students have realised that indeed they are listened to within their school and many are taking a more active role in the running of their schools. Their web 2.0 skills have developed 'enormously' to better prepare them for the 21st century workplace, enabling them among other things to evaluate their own learning and give teachers constructive feedback.

3. New patterns of continuing professional development (CPD), and their impact

All of the innovation fellows involved in this project found the continuing professional development (CPD) it represented was among the best they had ever experienced.

Indeed, 14 of the 19 fellows were promoted or had significant enhancements to their professional roles as a result (see box, page 6). A number of them also worked beyond their own schools – with other schools, local authorities and higher education institutions in the UK and the USA.

Many of the innovative approaches to CPD in this programme clearly reflect the '21st century' model of CPD championed by Professor David Hargreaves (see figure).

As one fellow, Richard Farrow of Haberdashers' Aske's Hatcham College, put it, the programme gave 'considerably more effective opportunities for reflective practice, networking with like-minded colleagues, and access to leaders in academic research.' Numerous CPD events during the programme enabled the fellows to deliver high-quality CPD to colleagues, which facilitated dissemination of best practice in their schools.

At Haberdashers, the resulting redesign of the education system received a rating of 'outstanding' from no less than three sources: the school's improvement partner, Ofsted and an Inclusion Quality Mark assessor. At the end of his innovation fellowship, Richard Farrow was promoted to vice principal within his school.

20th century vs 21st century CPD

Occasional, irregular	Continuous, regular
Sharp boundaries	Blurred boundaries
An add-on to practice	Fused with practice
Focused on the individual	Focused on the team
Mainly out-of-school	Mainly school-based
Cascaded from a central source	Moved laterally by peers
Lecturers/consultants	Mentors and coaches
Expert-to-novice	Peer-to-peer
Abstract knowledge	Craft knowledge
Designed by external providers	Designed in-house
Reflection-on-action	Reflection-in-action
Exclusively for teachers	Joint staff and students

Hargreaves, D, *Leading system redesign – 4: innovation networks in action*, SSAT, 2008

The programme gave ‘considerably more effective opportunities for reflective practice, networking with like-minded colleagues, and access to leaders in academic research.’

Promotions and career enhancements following the innovation fellows’ projects

The innovation fellows were overwhelmingly positive about the effect of their fellowships on their schools – and their own professional development. By April 2012, the following promotions and role enhancements had been noted:

- Chris Coleman, Conyers School and Sixth Form College: advanced skills teacher in e-learning
- Dr Damian Donnelly, Ysgol Dyffryn Aman (Amman Valley School), Wales: seconded as ICT strategy officer to Carmarthenshire local education authority; has also acted as consultant on educational use of social networking in a schools/university project in Oregon, USA
- Stephen-Lee Farmer, St James School, Exeter: head of new technologies for the school; like Damian Donnelly (above), acted as consultant on educational use of social networking in a schools/university project in Oregon, USA
- Richard Farrow, Haberdashers’ Aske’s Hatcham College: vice-principal, with responsibility for teaching across the school
- Monica Fitzpatrick, St Mary’s Catholic College: ongoing role of innovation fellow within the school with responsibility for project-based learning
- Paul Hanson, Homewood School: principal teacher of English
- Rebecca Honeyman, Priory Sports and Technology College: leading creative learning and teaching in the school
- Christian Kitchen, Aberconwy School: director of learning for mathematics, ICT and business
- Samena Metcalf, Stokesley School: head of house and responsible for creative technologies across the school
- Jessica Midgley, Bradford Academy: leading a group of colleagues to obtain accreditation as advanced skills teachers
- Sian Morgan, Barry Comprehensive School, Wales: the school’s coordinator for student voice and PSE
- Dane Ramshaw, formerly Notre Dame RC School, Plymouth; now learning platform systems developer, Oregon State University, USA
- Sharon Wallwin, AST at Yewlands Technology College, now has Specialist Leader in Education status
- Amanda Wright, Seven Kings High School: assistant headteacher
- Colleen Young, Newstead Wood School: senior teacher, academic assessment.

4. How schools design, implement and evaluate project-based learning

Schools are increasingly using project-based learning (PBL) to develop and assess lifelong skills in their students.

This group of innovation fellows investigated and implemented PBL to develop students' desire and ability to question, analyse and decipher - deep learning - in order to equip them for the 21st century. Project-based learning would also deepen the fellows' own understanding of assessment processes. This approach is seen to contribute to markedly improved results. A well-structured study showed twice as many students as in the comparable control group achieved above-target results using PBL.

Learnings from SSAT innovation fellows' work

School leaders might like to consider:

1. Seeking every opportunity to develop the skills and aptitudes young people will need for successful life in the 21st century, as well as purely academic outcomes (a theme explored in depth in SSAT's 2012 National Conference www.ssatuk.co.uk/nc12)
2. Recognising that collaborative learning between students, and between students and staff, can greatly enhance education in the school
3. Rather than banning or restricting the use of mobile phones and other new technologies (especially web 2.0), encouraging their managed use as mobile learning devices
4. Identifying 'generation Y' staff who can initiate and lead the use of social internet technologies to benefit students' education
5. Seeking ways to encourage individual initiative, professional/managed risk-taking, and increased willingness to take responsibility among students and staff alike
6. Recognising the potential of social networking to give students more, and more visible, involvement in leadership within the school and beyond
7. Making use of approaches such as project-based learning that can enhance skills and aptitudes as well as knowledge
8. Adopting non-hierarchical approaches to innovation, for example by allowing less experienced members of staff to lead innovation when appropriate
9. Seeking every appropriate opportunity for staff to develop and grow their capabilities – and then to apply them.

Practitioners in schools might like to consider:

1. Exploiting the fact that both teachers and students can benefit from learning together and using the new technologies to aid collaboration and creativity
2. Taking opportunities to innovate and to lead,

especially in areas where they have particular skills and interests that can be used to enhance education

3. Working with students to make productive use of web 2.0 technologies – recognising that students may initially be more skilled than their teachers in this respect
4. Seeking to develop young people's skills as well as their subject-based knowledge
5. Working to build students' ability to evaluate their own learning and identify where and how they need to improve – and making full use of social networking's potential in action research and enquiry (both by students and teachers)
6. Making appropriate use of project-based learning and other approaches that can contribute to a broader development of the young person for their future career and life, as well as their immediate education
7. Tapping into students' out-of-school knowledge and enthusiasms to make learning more relevant, and more fun
8. Being open with their students that they, too, are learners; sharing the learning journey
9. No matter how senior or experienced they may be, seeking continually to increase and enhance their skills as teachers, learners and leaders in education.

Next steps – keeping the momentum going

A number of the fellows felt strongly that the momentum they had enjoyed and benefited from should be maintained. The fellows accept that they and their associated institutions had a continuing responsibility, to:

- gain increased opportunities to lead CPD and innovation research practices across internal teams and external partner institutions
- plan ahead for the next innovation – and continue to keep a watchful eye on developing national/ international educational research
- have ongoing access to the community of former SSAT innovation fellows as like-minded practitioners who continue to work to transform learning.

An appropriate measure of the long-term value of the innovation fellows programme will be its legacy – which can take the form of a project adapting in order to continue (evolution) or bringing in new colleagues to

The process

Of great importance to all the groups of innovation fellows in this programme was the way they could interact and provide sounding boards for lines of enquiry in their individual projects and schools. This was made possible by the innovation fellows' network, which made full use of the web 2.0 technologies for discussion and interaction on a daily basis, as well as less frequent telephone conversations and actual meetings.

The IF programme embodies the concept of kaizen, originally developed in Japanese manufacturing management. Since extended to organisations in other countries and sectors, it describes an approach whereby everyone in the enterprise strives towards continual improvement in products and processes through a combination of personal discipline, teamwork and regular meetings such as in quality circles. It depends on willingness to change and usually a non-hierarchical approach. In the case of the innovation fellows' work, this leads to a group of schools being more powerful than any individual school alone.

Schools working together have enabled increased and improved CPD, cross-school projects and a greater depth of research. Learners, both students and teachers, have also been able to cross-collaborate with others nationally and internationally. Many of the innovation fellows agreed with Jessica Midgley of Bradford Academy, when she said the CPD she had experienced in this programme was ' the most significant and beneficial in my career.'

continue or extend the work (succession). All the signs are that the work of these innovation fellows will achieve continuity and have a strong, positive and long-term influence to improve education far beyond their schools.

Difficulties

Inevitably radical changes such as those described here encounter a number of difficulties, two of which are resistance from other members of staff in a school and from outside authorities; and the time and cost entailed in such ambitious CPD programmes – notably the innovation fellows' 1-day-a-week-for-a-year sabbaticals.

Resistance

As indicated above, the innovation fellows showed great enthusiasm for their projects and zeal in promoting new approaches to learning, teaching and school management. However, they freely conceded that in every school there are staff who are less than keen to embrace change that will have a significant impact on their methods of working – particularly, perhaps, if it involves new technologies. One fellow commented: 'Some staff are blockers, because they think that when you show them something new to use in their classroom it is going to take too much time to learn… Some staff were keen, would use it for a bit then not bother and some just weren't interested at all and would give me excuses.' Another commented: 'The need to negotiate can be quite difficult; different work paces and different viewpoints can sometimes result in conflict.' And a third: 'A lot of time was taken up with sorting out technical difficulties and "selling" the innovation to SLT and the network manager.'

The fellows had developed a number of ways of tackling such resistance through initiating a climate for change and capacity for change:

- staggering the introduction, starting with enthusiasts and creating a momentum that would attract other colleagues
- providing training to help staff accept and integrate changes in their own pedagogy
- identifying the factors that deter colleagues and taking action to resolve or remove them
- pairing teachers 'strategically' so more reluctant or less confident colleagues could be encouraged to adopt new approaches
- demonstrating the benefits over a period of time and disseminating them to the rest of the school
- 'encourage, cajole and motivate staff to become willing learners'.

Time and cost

This project was funded by the Specialist Schools and Academies Trust, predecessor organisation to the current SSAT (The Schools Network) in 2009-10. The main cost was paying for cover one day a week for each of the 19 innovation fellows over the whole of the school year, so they could pursue their research, investigations and collaborations. Clearly, for an individual school to invest such resources in a middle-level or senior teacher for a whole year would carry a significant cost. The school leadership would need to be confident that the rewards would be worthwhile, both for the individual and the school.

Nevertheless, school leaders often attest to similar levels of time and resource investment in developing their future leaders and their schools. Many headteachers invest several hours each week in dialogue, mentoring and coaching of staff members they see as having the potential to become school, curriculum and pastoral leaders of the future.

And there is much evidence, notably in this report, that such investment can indeed pay off handsomely for both individual and school. As the following pages show, the innovation fellows were inspired by the trust invested in them by their schools and the opportunities they were given to learn, discuss and implement some of the latest approaches to pedagogy and school management. Many of them willingly invested a huge amount of their own time in their projects, and some continued to do so over a year later.

Networks and chains of schools and academies in particular may find such investment in their brightest, most enthusiastic staff hugely valuable. Teachers and other staff members in one school who are given such opportunities can then readily become the leaders in another school in their networks.

1

Online collaboration tools enhance students' deep experience of learning and teaching

This group of innovation fellows used interactive web 2.0 technologies to advance personalised and collaborative learning.

Introduction and summary

The use of wikis, YouTube and other social internet technologies enabled students to work together and interact easily about their schoolwork with each other – and with their teachers. Among the many favourable reactions from students were the following comments: 'improved my team working skills', 'your friends can tell you what you did wrong' and 'you don't have to be all sat at one computer to do group tasks' (see Benefits to students, page 17).

A number of student groups in the six schools directly involved in 'Team Cloud', as they called themselves, achieved marked improvements in academic results compared with their peers. The main benefits seen were in qualitative factors, including: improvements in student engagement and attitudes and staff engagement; the sharing of expertise; increased personalisation of learning; development of a productive teamwork ethic; and progress in learning for the fellows, other teachers and the students.

Cloud computing

'Cloud' computing refers to applications and data being stored on servers, which users can access from web browsers. This means communication is not constrained by information held on particular computers.

How did they do it? The schools collaborated to research and apply the interactivity of web 2.0 and cloud computing, and to assess the impact on learning and the wider institutions.

Indeed, without these technologies it is hard to see how Team Cloud could have worked together at all. They were a very diverse group: the six innovation fellows had a variety of subject specialisms and backgrounds in different school contexts. The schools were also geographically dispersed – from Kent in the south east to North Wales, and to Teesside in the north east. This diversity of perspectives sparked a variety of creative ways to enhance students' experience of learning and teaching. It also demonstrated the value of cloud computing, in enabling extensive and detailed collaboration over long periods and long distances.

Learnings from this group of innovation fellows

School leaders might like to consider:

- Seeking every opportunity to develop the skills and aptitudes young people will need for successful life in the 21st century, as well as purely academic outcomes
- Recognising that collaborative learning between students, and between students and staff, can lead to appropriate personalised learning for every child, and to greater engagement of both students and staff
- Rather than banning or restricting the use of mobile phones and other new technologies (especially web 2.0), encouraging their managed use as mobile learning devices
- Seeking every appropriate opportunity for staff to develop and grow their capabilties – and then to apply them.

Practitioners in schools might like to consider:

- Exploiting the fact that both teachers and students can benefit from learning together and using the new technologies to aid collaboration and creativity
- Specifically, students can become teachers of each other
- Working with students to make productive use of web 2.0 technologies – and the fact that students may initially be more skilled than their teachers in this respect
- Working to build students' ability to evaluate their own learning and identify where and how they need to improve – and making full use of social networking's potential in this respect
- Tapping into students' out-of-school knowledge and enthusiasms to make learning more relevant, and more fun.

Approach

The one aspect on which these innovation fellows all agreed from the outset was that the learning process – not the technology – was central to their study. The fundamental principles they sought to adopt were those described in Bloom's digital taxonomy (see figure, page 12).

In most cases the schools involved had until then done little to exploit web 2.0 as a medium for learning and teaching.

Starting in September 2009, the team of innovation fellows set out to determine how the use of web 2.0 interactive technologies could aid learning and teaching. The fellows investigated how they could introduce such new technologies into schools and assess their impact; how web 2.0 could engage the learners; and how to overcome factors that could block progress.

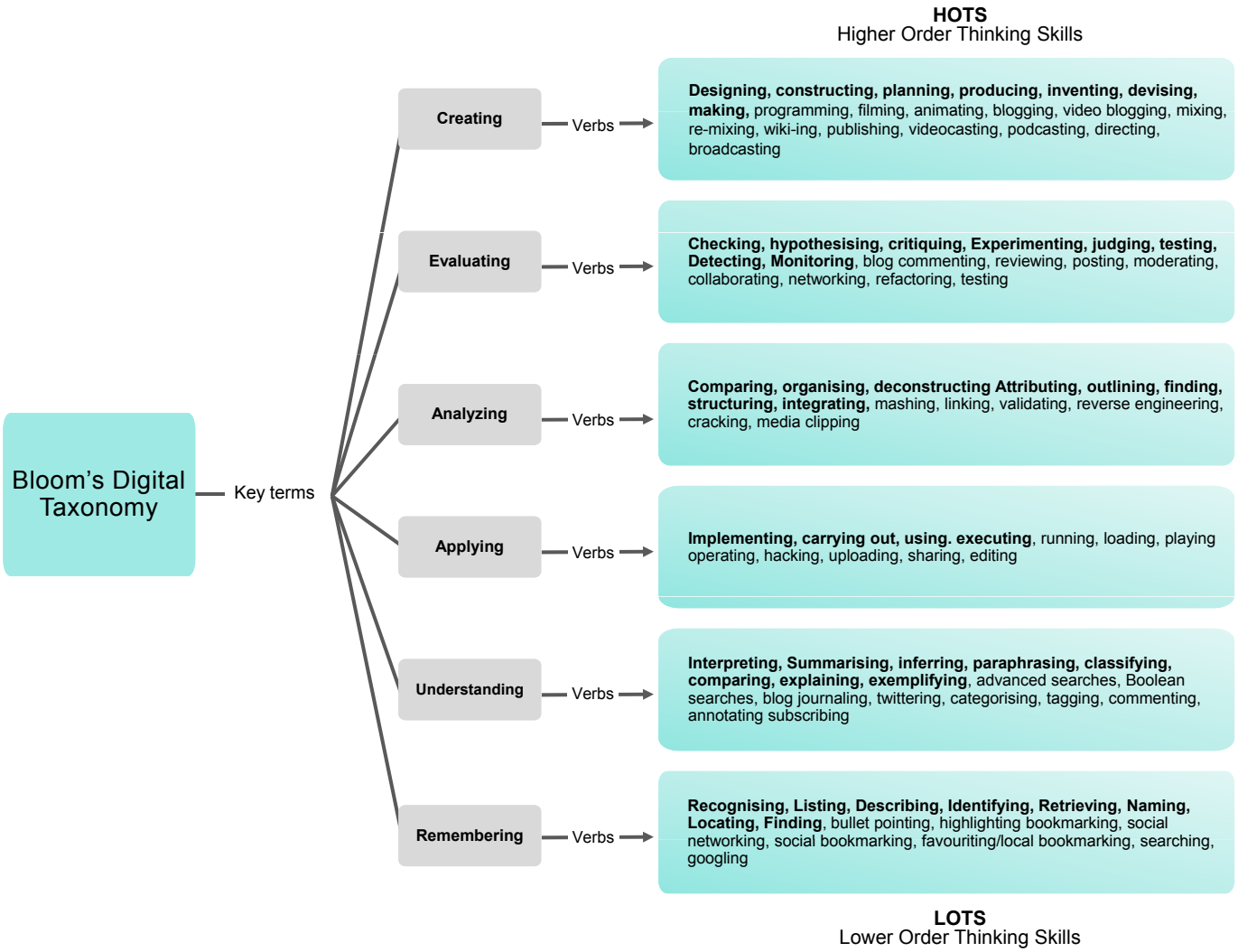
Each week, the innovation fellows from the six schools in this group got together online and evaluated their technological impact upon their schools, discussing;

- What technology are we using in each school?
- What impact is it having on the school?
- Can the use of the technology be extended to the other schools?
- Are there other ways the technology can be used?
- What else is each school doing that could be implemented in other schools?
- Where is the scope for collaboration between schools using technology?
- What new technologies have been found that could be implemented?

Their model of working is described by David Hargreaves in *Leading system redesign – 4*: he states the simplest definition of innovation for professionals in the education service is 'doing things differently in order to do them better'. The innovation fellows' work would be described as segmented innovation: the various participants divided a larger innovation into parts or segments that could be developed separately and then put together at a later stage to complete the innovation.

This co-construction allowed the new technologies to be introduced in a safe manner, with the backing and technical support of partner schools. For example, all the fellows quickly became aware of the need for staff

Bloom's digital taxonomy



to ensure only safe websites are used and they can monitor material being uploaded. Colleen Young of Newstead Wood School, Kent, notes, 'with a wiki (a website allowing the creation and editing of interlinked web pages by multiple users) you can see who did what. If necessary, a page can be reverted to a previous version.'

The combination of face-to-face meetings and regular online contact has worked well. Perhaps surprisingly, the fellows found they could come genuinely to know each other by communicating online. The interaction was efficient and fulfilling. 'I've enjoyed collaborating with lots of other innovation fellows,' says Colleen. 'Sitting in our own homes, we could plan, for example, our presentation for the SSAT national conference as easily as if we were in the same room, using the shared copy of the presentation on our screens and the chat box on the side. We'd say, "You fix that slide and I'll do the next one." That was brilliant.'

Choice and use of technologies

The Team Cloud schools appreciated that their students were 'digital natives' and often more comfortable with these new technologies than their teachers – they have grown up with it and can use it easily. But a key question was, how well do they use it? Many students' knowledge is only surface level: they still need training in real thinking skills. They have access to so much information – more than ever now they need information literacy skills.

The fellows found wikis useful in many contexts. They supported new ways of working – for example a class collectively undertaking a homework exercise (peer assisted learning), or writing journal entries for reflection which could be seen by other students (peer/self-review).

YouTube is another technology that almost every school child will be familiar with, yet which has huge educational potential. At Aberconwy School in North Wales, Christian Kitchen sees it as 'a great free service for the school… we are developing the use of video in class, flip teaching (where the lecture is video'd for viewing as homework, and classroom time is used more productively for discussing and applying the content) and as an online work exemplar for parents and students.'

Aberconwy also creates option videos (eg, a day in the life of year 7, KS5 classes), and student teaching videos, using YouTube. A number of key staff are interested and willing to develop the use of videos in school. This

Some of the software / programmes used

- Google Apps www.google.com/enterprise/apps/education: the heart of all collaboration at some schools, providing secure online storage and a way to collaborate in real time. Also a fast, efficient way for departments and teachers to work together.
- Diigo www.diigo.com: research and social bookmarking tool – in essence, a web-based mobile library. Teachers can set up educator accounts allowing classes of any age to share and comment easily on their favourite websites. Teachers can expand their own personal learning networks and share resources with other professionals.
- Edistorm (now Stormboard) www.stormboard.com: online brainstorming tool, which allows for quick and easy collation of ideas from members of a group, even remotely. Ideas can simply be edited, deleted, discussed and voted on.
- Storybird http://storybird.com: set up a free account, choose your artwork and get writing. Fun and easy to use. Used with year 7 classes (under 13s can sign up with parental permission).
- Wikispaces www.wikispaces.com: free for educators, this allows students to collaborate in a safe environment. All students can edit pages and upload resources. It is possible to have a discussion forum associated with every page. It is extremely simple to set up and use.
- Some schools in this group also developed their own applications, including a central portal for their Google Apps, with links to many web 2.0 technologies; and a Ning social network www.ning.com for students to come together online in a safe informal way. This is used for teaching e-safety and social networking in school.

approach has been used in year 12 ICT, physics and business, and year 9 and 10 PE. Students and teachers have had over 1500 views of videos created at school.

'A local school used our Google Apps site to register their students so they can use Google Forms specifically to collect and collate data,' says Christian. 'This was part of the Welsh Bac exam.'

At Stokesley School, North Yorkshire, innovation fellow Samena Metcalf was asked to focus on one tool that could help to develop a model of personalised learning. 'The model should engage the young people as autonomous and collaborative learners, responsible citizens who make a positive contribution to their school communities,' she notes. She chose Wikispaces, which she had been using for collaboration in her classes. She has also used and trained colleagues in the use of Google Apps (cloud): 'The level of interaction and work being completed outside of school improved, as did their final grades compared with the previous year's cohort on the same piece of work.' (See *Measurable outcomes*, page 15).

At Priory Sports and Technology College, all BTEC courses will now use Google Apps. Web 2.0 technologies will support parental guidance on how they can help their children learn.

Some wikis used at Newstead Wood School, Kent

- Maths: staff and students used wikis for reflective journals and class activities.
- Psychology: A-level students used a wiki to share research articles.
- Economics: all students in an A-level group contributed to a collaborative revision resource using a wiki.
- DT: year 8 students entering the Create Sport Challenge competition used a wiki to upload information and images of each team's entry, which they then showed the competition organisers.
- Geography: a wiki enabled the A-level group to collaborate as a class, sharing resources they found. It also acted as a log of the course.
- Student leaders team: used a wiki as a central place to capture all meeting notes and discussions.
- Model United Nations: two schools' sixth form teams together planned the annual Bromley Model United Nations Conference for 200 sixth formers across the borough.

Outcomes

The innovation fellows all found a wide range of positive outcomes from their fellowships. Team Cloud noted:

- Student engagement and attitudes towards technology have been good
- Students have had the opportunity to learn from each other
- Staff engagement has increased
- The sharing of expertise through a larger talent pool increased interaction and promoted more rapid change
- A mixed non-hierarchical group (of innovation fellows) promoted openness, resulting in people contributing according to their strengths, which increased morale and self-confidence
- The web 2.0 technologies increased the personalisation of learning (for both staff and students) – learners can work at their own pace when necessary
- The supportive nature of the group encouraged active professional risk-taking
- The freedom to innovate and for self-direction allowed creativity and flexibility to explore new ideas
- Working outside the fellows' personal comfort zones at times contributed to the speed of learning and reinforced the teamwork ethic
- The competition between fellows that arose from this structure increased productivity
- Researching and using technology allowed each team member to progress their own learning, as well as that of students and their schools.

All of the fellows agreed that their own enthusiastic and effective use of the technologies was key to success in

implementing them with their students and colleagues. As one fellow said: 'I tell all my students they should be reflective learners – the least I can do is the same.'

'The power of the programme for me is quite simple – time,' says Colleen Young. 'Each Friday I could collaborate with those on my team, reflect, explore, think… Time has provided the freedom to deepen reflective practice, carry out action research and evaluate it to determine future approaches. And having others to offer feedback on ideas or to collectively shape new ideas adds capacity and creativity to the process. Both students and teachers can learn by collaborating online. Should I need reassurance that I'm on the right track a member of my team is there for me to exchange observations/ thoughts/ ideas and between us we can come up with something that maybe none of us would in working alone.'

Measurable outcomes

The outcomes of this work to date are perhaps most easily described in terms of student attitude and engagement and the development of the so-called 'soft' skills. However, some numerical data clearly suggest that test scores are also boosted. It is a frequent experience in the innovation fellows' work that the highest class average scores in a year group have come from the class involved with this work.

At Priory Sports and Technology College, Lancashire, innovation fellow Rebecca Honeyman tracked the learner outcomes in a 'booster' group of 22 students with lower prior attainment than the average: 80% of the test results where new technologies were used were better than those where they were not (see table: the blue columns are those where the new technologies were used).

'Due to the tools we were using,' she explains, 'students were allowed to reflect and improve on their work in the time that suited them. This tool allowed assessment for learning to happen naturally. It had a big impact on their grades, as did the fact that they worked in groups to complete this work. They were learning from each other and teaching each other.'
Other fellows have also noted how achievement of NC levels improved through the ease of peer assessment

Use of new technologies boost results of students with low prior attainment

FFTD	End of year target	Introducing science test level	Myself and others test level	Sperm story	Letter to an MP AF2 thread 3	Initial solids, liquids and gases	Re-draft solids, liquids and gases	Enterprising test level
-	3b	-	3c		-	4c	4a	-
5b	4c	5c	4c	5	5b	5c	5a	3c
5b	4c	3a	4a	5	5c	4c	4a	5c
5c	3a	4a	4c	4c	5c	5c	5a	4b
4a	3b	4c	3a	-	5c	abs	abs	4c
4a	3b	4b	4b	-	5a	4b	5c	4a
5b	4c	4b		6	5a	-	-	4b
-	3b	-	4b	6	5b	4b	5c	4b
5b	4c	4b	4b	6	5c	4a	4a	3a
-	4c	-	4b	6	5b	4a	5c	3b
5c	3a	-	4c	4a	5a	inc	inc	4b
5b	4c	5b	4b	inc	5a	4c	4a	4b
5b	4c	5b	-	5a	5a	abs	abs	3a
-	3a	-	4b	5	5b	3a	4c	4a
4a	3b	4c	4a	6	5b	5c	5a	4a
4a	3b	3c	3a	5a	5a	-	-	4a
5b	4c	3a	4b	5	5c	5c	5a	4c
4a	3b	4c	3b	inc	5c	4c	4a	3b
5c	3a	5b	3b	4c	5c	5c	5a	3c
5a	4b	-	4a	4a	5a	-	-	5c
5b	4c	4a	4a	6	5a	-	-	5b
5a	4b	4b	4b	6	4a	3	4	3b

and formative feedback. Due to the nature of the group work, the students become effective coaches for each other and even peer teachers.

Similarly, at Stokesley School, innovation fellow Samena Metcalf found that among the 26 students in a year 7 class, one achieved their target for the year: the other 25 all exceeded their targets.

The figure shows results for a group of mid-ability year 7s in mathematics over one year. This year the teacher used a wiki so the students could inform each other and the teacher what they were and were not good at. They used it to learn from each other, while the teacher used it in lesson planning, to cover topics many students found difficult and to set up a buddy system for them to support one another. 'This is the only thing he did differently between January and June,' Samena notes, 'and this is the first time that all the students either met or exceeded their targets. In fact they nearly achieved KS3 FFTD – the standard for students two years older.'

Qualitative results

But the effects on attitude, engagement and the soft skills are no less important. Among the common observations in different schools is that students enjoy and respond well to seeing each other's comments and ideas: 'Collaboration feels more natural for the class'. Students have created and shared mind maps, for example, adding links to their journals so they can see each other's resources. One innovation fellow reported: 'Within a day of receiving their exam timetable, a student scanned it and put it on a wiki page so it would be there in case anyone lost it!'

A typical response came from Colleen Young of Newstead Wood: the outcomes include 'greater staff awareness and a growing interest in the possibilities that these technologies offer to enhance student learning. I am reminded of a blog post stating 21st century educators don't say "hand it in"; they say "publish it!"'

'When I began on the innovation fellows programme, Newstead was not using for example Wikispaces at all. Now I often hear "could I do this with a wiki?"'

Peer assessment and formative feedback led to outstanding performance in this group

Y7 target	KS3 FFTD	Assessment 1 level	Assessment 2 level	Level
4a	6C	4a	5c	5B
4a	6C	5c	5c	6C
5a	7C	5c	5b	6C
5c	SR	5c	5:	6C
4a	6C	5c	5c	6C
5a	7C	5c	5b	6C
4a	6C	5c		5B
5b	6A	5c	5c	6C
5b	6A	4a	5c	6C
5b	6A	5c	5c	5R
5b	6A	5c	5C	6C
5a	7C	4a	5b	6C
5b	6A	5c	5C	6C
5a	7C	5c	5b	6C
5b	6A	4a	5c	5A
5a	7C	5b	5b	6C
5c	6B	4a	5b	6C
5c	6B	4a	5c	5A
5c	6B	4a	5b	6C
5a	7C	4a	5c	6C
5b	6A	5c	5c	5A
5c	6B	4b	5c	5A
5c	6B	4b	5b	5A
5c	6B	4b	5c	5B
4a	6C	4b	5b	5C
5c	6B	4a	5c	5A
		Sept	Jan	June

Benefits to students

Feedback from Priory Sports and Technology College students on their experience with web 2.0 with their schoolwork included:

- 'Improved my team working skills'
- 'I like getting feedback at anytime and anywhere'
- 'Your friends can tell you what you did wrong'
- 'You don't have to be all sat at one computer to do group tasks.'

The findings of the innovation fellow's work are being disseminated throughout the school, and each department is moving towards applying some of these strategies. A new hub named 'creative learning and teaching' will drive this work, promoting the importance of web 2.0 and providing a staff training programme.

This work has frequently resulted in students spontaneously starting up their own accounts on these websites, and using them in their extended projects. In some cases the students are helping the teachers to put their own comments on and to gather evidence on what the students think.

The most 'digitally native' students in these schools are generally the younger ones, so pilot projects in this area were more likely to start with year 7s than with year 10s or older. 'Observing my year 7 class,' says Colleen Young, 'I do believe that their experiences with the prevailing technologies have enhanced their learning – producing posters on Wordle or writing stories or perhaps editing a wiki page certainly engages them and I believe supports their learning as they start thinking about teaching others.'

Wikis used by the student leadership group at Newstead Wood have transformed the way the team works. Student leader Laura noted: 'I love that you can make a wiki into whatever you like. We have used the wiki to take minutes at meetings, to upload files such as speeches and to share ideas and plan for events such as the visit of students from Singapore. It has also been great being able to be part of more than one wiki… we can become more organised and stay on top of our tasks. Wikispaces has become indispensable and there is no doubt that we will continue to use it in the future. I don't know how we coped without it!'

Benefits to school leaders and teachers

Aberconwy School has found that using Google Apps to create and share faculty agendas opens up lines of enquiry early and allows all staff to co-construct the meetings.

Some subjects have begun to use the platform for coursework and moderation.

Aberconwy Innovation Site, which promotes the use of new technologies in school, includes a large number of files for teachers to use as templates, and reviews of emerging technologies they can use in their subject areas. This has led to a greater variety of learning opportunities for students. Aberconwy Leaders Network was created to encourage discussion, collaboration and communication between the senior leadership team, directors of learning and curriculum lead learners.

Christian led CPD sessions in school to promote the use of technology to aid learning. In one twilight event, every member of staff opted to attend one particular session. 'The feedback was excellent and is now part of the continuing cycle for Aberconwy,' he reports. 'As a director of learning I have overall responsibility for standards in three curriculum areas, and I have used this to support early innovation in school.'

Aberconwy School's use of Google Apps for teaching and learning audits allows students to complete surveys anonymously, which gives subject departments a true picture of students' opinions.

Using web 2.0 to gather student opinion is widespread in Team Cloud. Lisa Cowell, Priory's director of creative and liberal arts, says: 'Surveys are easy to use and the feedback is instant. The questionnaires help me gather stakeholder opinion of the service we provide to our partners, and the feedback is invaluable.' Another teacher commented: 'Google Apps has been quickly adopted by teaching staff due to its ease of use and ability to provide us with the data and analyses we need. It also allows us to assess new initiatives very quickly.'
And the fellows have typically found their school

leadership teams supportive (hence the high proportion of fellows who have been promoted or given increased responsibilities as a result of their work). The SMT at Newstead Wood, for example, is certainly supportive. 'They're as keen as I've been about the learning – that it's not technology for technology's sake.'

But perhaps the most radical impact of this technology is that, for many teachers, it provides insight into what their students are really capable of. Given the right opportunities, students are very often more responsible than they are given credit for – and understanding this gives teachers the opportunity to challenge, stretch and engage their students more effectively.

'Where we once had specific criteria for assignments, homework etc, we now have an ethos of individual choice for the student, allowing them to create, remix, mash in areas they feel most comfortable - a prime example of personalising learning.'

Christian Kitchen, Aberconwy School

Case history: Conyers School, Yarm

How new technologies enhance collaborative and creative learning in a Teesside school

Conyers School has used web 2.0 technology to engage students through generating, sharing and collectively developing resources and learning materials in many electronic formats. This was made possible by the one day a week during the school year 2009/10 during which innovation fellow Chris Coleman, now advanced skills teacher for e-learning, was able to focus on this work. It included generating cross-school CPD to share knowledge about the introduction of several new technologies in the school, in order to enhance the students' deep experience of learning. These technologies include:

- cloud computing using Google Apps for collaborative learning
- collaborative wikis using Wikispaces
- online assessment using Yacapaca digital assessment
- social media using Oxwall social platform
- assorted web 2.0 resources to stimulate learning.

This work quickly stimulated colleagues to become involved. More teachers then began working online, collaborating with each other as well as working with their own classes to improve the learning and assessment process. As more students found out about the technology, they too independently chose to use it – mainly for its simplicity and the opportunities for collaboration with their friends. They were personalising their learning.

Conyers' executive team gave the initiative wholehearted support. A series of 'micro-courses' were developed and delivered to the whole school to introduce the uses of each technology and how they can be used in each department. These voluntary sessions attracted teachers and support staff from many departments.

An interesting factor in this development was that many teachers felt compelled to attend the training because their students were using the pilot technologies to present their homework.

Outcomes: learning and the learner

Conyers' personal learning and thinking skills (PLTS) framework shows clear benefits of the programme.

Independent enquirers: Using the technology, students have increasingly worked independently, responding to feedback from their teacher and peers. Cloud computing

has allowed students to work from anywhere and track their own working. Access to resources has helped them to work on their own as well as to collaborate with their peers.

Team workers & effective participants: Group projects such as video casting, animation and cloud projects, using cloud computing, Wikispaces and YouTube, have really engaged students. Making topics more general and focusing on the outcomes have resulted in students being more willing to work together. 'Students find it motivating to know that their work will be broadcast online for the world to see,' says Chris Coleman. 'They're more focused on the production, rather than the software tools they are using.'

Self-managers: Enabling students to work anytime, anywhere led to them managing their own schoolwork. Through a tracking system on the cloud and coursework regularly reviewed by the teacher, students are able to direct their learning at a pace that suits them, helping them to become more responsible learners.

Reflective learners: New technologies have given students a platform for reflection in a familiar environment. They use Wikispaces extensively to reflect on the process (learning journey) and their strengths and weaknesses. Reviewing their work as they progress enables them to improve it. Use of other technologies such as Wallwisher (wallwisher.com) and social networking blogs has also encouraged personal reflection and discussion. This has developed and enhanced Conyers' sense of community.

Creative thinkers: Creativity has been at the forefront of the innovation fellows programme. Providing an array of technologies for students to use has sparked independent thought and allowed students to demonstrate their knowledge, skills and understanding, using technology they are familiar with (see box). These ways of working show clear signs of improving disaffected students' engagement: 'They explore creative areas and learning – without realising that this is school work!' says Chris.

Students use these technologies for school work – without need for teacher input

- collaborative presentations
- stop-motion animations
- video casting
- games design
- video production
- podcasts

The teachers' role now is often more about facilitation than control.

In practice, these developments mean, among other things:

- Staff and students now collaborate online
- Students can receive live feedback on their work
- Lesson and activity planning can be done remotely
- Controlled assessments are more manageable
- More subjects use electronic assessment
- Sport and drama departments deliver all their assessments via cloud computing
- A web 2.0 unit developed by the ICT department explores web 2.0 sites and how they can be used in different subjects
- The school plans to combine cloud computing and the Conyers VLE
- The school is exploring mobile access to its systems via student Wi-Fi, and mobile phone access to the services.

As a result of these outcomes from the innovation fellows programme, Chris Coleman was appointed

an advanced skills teacher with responsibility for the school's technical team.

Supporting other schools

The school is helping other schools to adopt cloud services. The Conyers network now includes feeder schools, all of which can access the school's cloud services and collaborate with its students. The primary schools have a social network through which they can communicate during the pupils' transition to secondary. A significant number of schools now use Conyers' learning gateway for ICT (www.gr82bgeeky.co.uk), which provides a national portal for the sharing of ICT resources.

Update, 2012

Using these technologies has led to a number of successful outcomes:

- 95% A*-C and 100% pass at Applied GCSE ICT in 2010-2011
- 100% pass rate to date in Creative iMedia, facilitated by cloud computing
- Increased homework response in ICT through greater accessibility
- Wider uptake of technologies throughout the school: in sport, all the course is delivered using cloud computing, and in science all KS3 homework uses online assessment systems.

With Conyers' technical team, Chris is further researching social media and the impact of personal technology use in the classroom. The school wide Wi-Fi will be accessible to all students, and Chris has produced an app allowing students to access all the researched technologies in one place. It won't stop there: the Innovation Fellows programme is set to introduce further web 2.0 and social media technologies into teaching and learning at the school and its partners.

2

Using online communities and social media to improve student engagement and leadership

Education is not just about academic learning. The Welsh Connection group of innovation fellows addressed how new technologies could help enhance and strengthen not only learning but student voice.

Introduction and summary

Why and how might web 2.0 technologies enable a more effective student voice? 'Traditional school council structures do not allow for the sustained momentum and collaborative working that web 2.0 tools offers,' explains innovation fellow Sian Morgan of Barry Comprehensive School, South Wales. 'And social networking is something we as teachers cannot ignore – we must teach responsible use of this internet technology, and advocate its safe use by students. There are some dangers in Facebook and the like, but they can be used constructively, and students need guidance on how to do that.'

The action research of this group, which included schools in the south west of England as well as in Wales, was aimed at:

- improving students' perception of how much they are listened to within the school
- improving students' web 2.0 skills to better prepare them for the 21st century workplace
- enabling students to take an active role in the running of their schools
- providing a platform for students to evaluate their learning and give teachers constructive feedback
- empowering students to innovate and lead projects/initiatives in their schools
- improving collaboration and cooperation between students from different schools, enabling them to broaden their perspectives, learn from the skills and experiences of others and share good practice.

The group used increased levels of engagement, co-construction, and inter-school collaboration to enhance specific learning activities, as well as to support student leadership.

The fellows' research in their own schools confirmed that despite the schools' existing student voice mechanisms, most students felt they had little voice or input in school issues. But following the projects in schools, students realised that indeed they are listened to within school. Many are now taking a more active role in the running of their schools. Their web 2.0 skills have developed 'enormously' to better prepare them for the 21st century workplace, enabling them among other things to evaluate their own learning and give teachers constructive feedback.

All the innovation fellows, and very many of their colleagues and school partners, have found these innovations have engaged both students and staff in their schools and beyond.

Learnings from this group of innovation fellows

School leaders might like to consider:

- Giving appropriate support and encouragement, which can enable students to have a strong positive impact on learning and leadership in schools
- Enabling access to social networking tools to support student voice, which will also demonstrate the school's commitment to students
- That communication technologies such as web 2.0 will support the skills people will need to live and work successfully in the 21st century
- Use of such technologies can also make collaboration with other schools and the community easier and more effective.

Practitioners in schools might like to consider:

- Effective development of student voice enhances engagement and motivation throughout the student body, with a positive effect on learning and teaching
- Student enjoyment and perceived relevance to real life are key factors in engagement
- The benefits of sharing the learning journey; being open with their students that teachers, too, are learners
- In the case of web 2.0 technologies, teachers may initially have much to learn from their students
- Working with students on applying web 2.0 technologies can improve their teaching and enable further professional development
- No matter how senior or experienced they may be, seeking continually to increase and enhance their skills as teachers, learners and leaders in education.

Approach

The half-dozen members of this group agreed they would each undertake discrete parallel action research based on their own schools' stages of development of the online environment. In practice they all started by collaborating using a single Elgg (social networking engine: http://elgg.org/); then each developed their individual school Elggs. Originally this was to facilitate student voice in the schools; then the fellows undertook collaborative work on shared student voice projects between schools, to be followed by international links. Some of the schools' student representatives were fully engaged in the research from the start. They used the Elgg to document their experiences, to introduce peer teaching and to work with primary school pupils on safe social networking.

The innovation fellows started with Elgg because 'it's instantly modifiable for our needs,' as Sian Morgan says. 'We can decide which modules to use and who will have access, for example, and can monitor and control content. We own the site, unlike many other social networking platforms. Commercial people will dictate to you what you can and can't have. That doesn't apply here. We don't have to apply to a third party for action to be taken against cyberbullying and the like. It also helps that the students are aware we can see what they are doing!'

Through the Elgg site students can share calendars, post minutes, comment and conduct their own discussion forums. The schools are also using it for teacher Inset. Yet at Barry Comprehensive, it is students who monitor and police the Elgg's use, and encourage ownership. It's the students who mostly flag up inappropriate messages. 'This provides visual evidence that students are taking on more leadership roles. Teachers can use the Elgg, but it's the students who own it.'

Many school councils typically meet three times a year – with the Elgg, they can do it as often as they wish. And they can do collaborative research, and conduct surveys to get evidence to present to their schools' SMT and to other schools. 'They can take action, be involved,' says Sian.

Elgg use in school

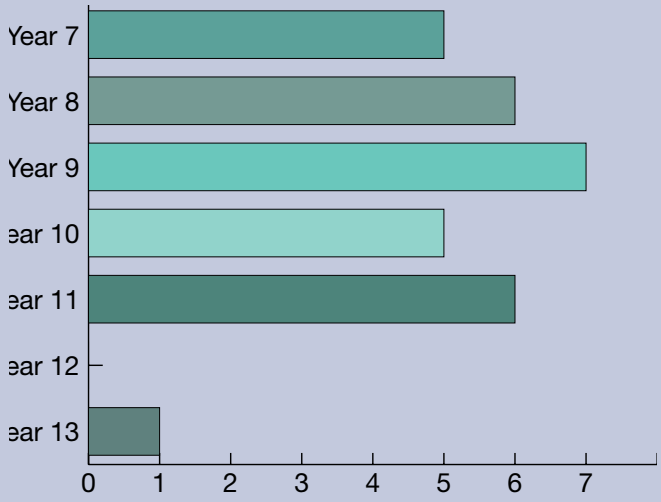
Student perspectives on using social networking tools for online collaboration

D.P. Donnelly; S. Lee Farmer; A. Luxton; S. Morgan & D. Ramshaw*

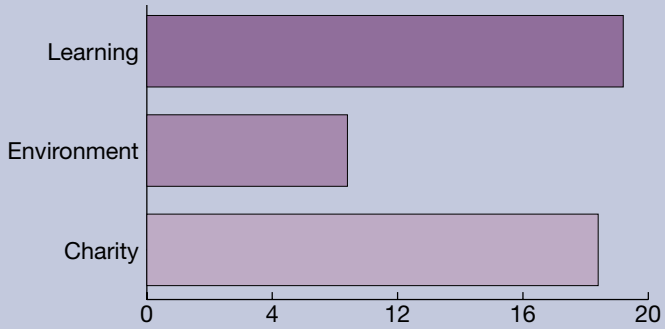
Introduction

Student reps, as regular users of the Elgg software within and between five secondary schools in England and Wales, provided their perspectives on collaborative use.

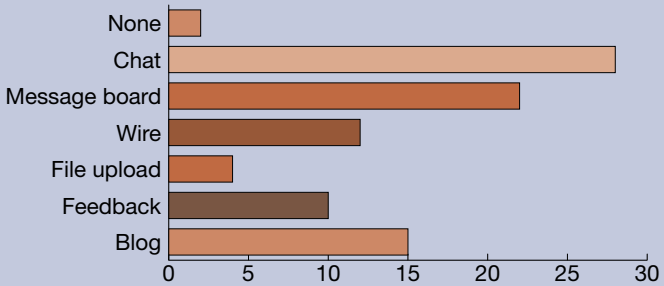
What year group are you in?



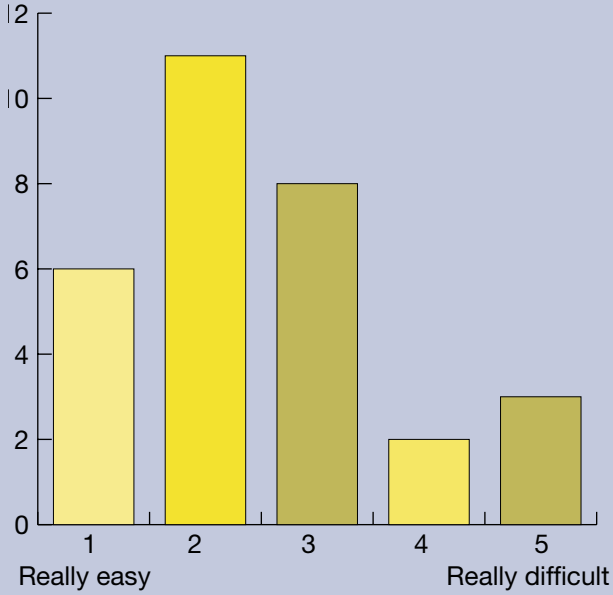
What collaboration groups have you worked on?



Which of these have you used and why?



Ease of working with other schools via Elgg?



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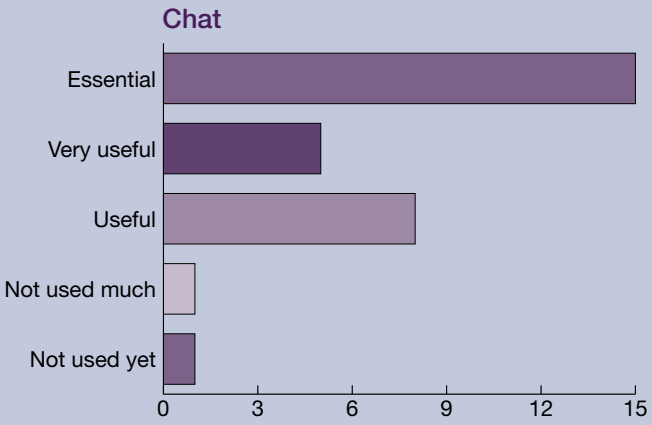
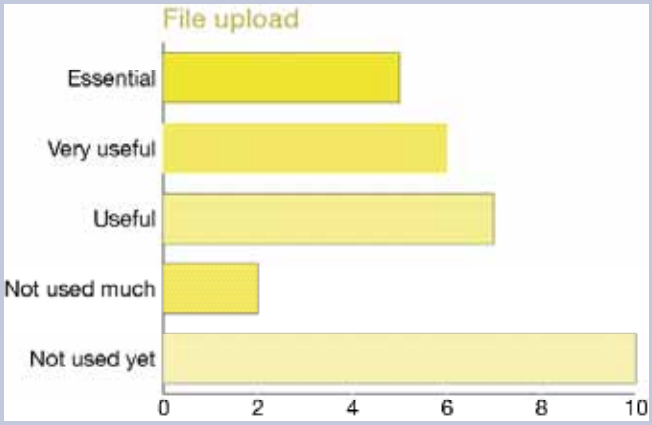
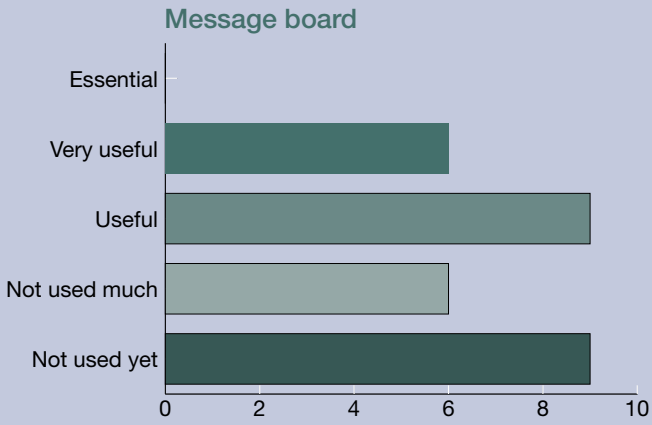
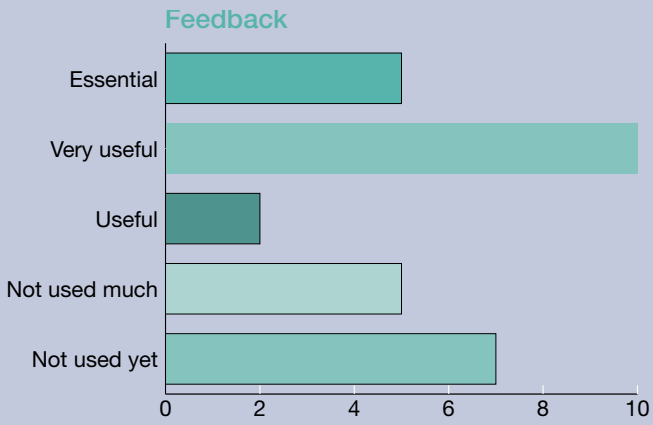
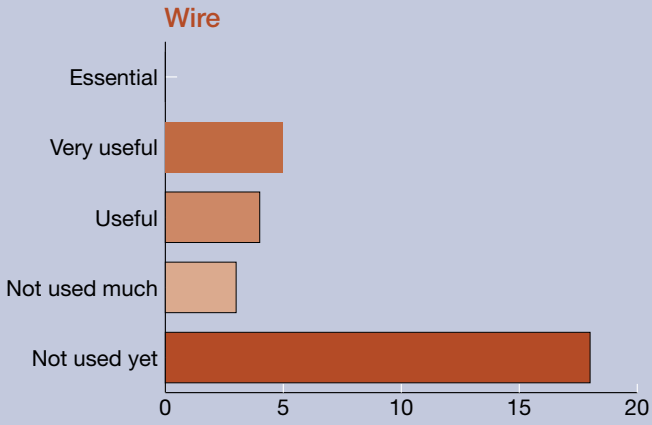
Which Elgg modules have been most useful?











Conclusions

Elgg has provided a platform of tools that has facilitated “easy” online collaboration between schools on a range of issues across KS3-KS5.

The usefulness of chat, message boards and blogging has supported this exchange.

Feedback on the platform has enabled co-construction of these features and further suggestions for site redesign.

Future developments aim to interconnect elggs between schools and other web 2.0 applications.

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St James School, Exeter

Activities on the school's Elgg platform increased very rapidly over the space of nine months (February-November 2010)

Activity	Increase
Groups	117
Messages	25472
Discussion topics	303
Wire posts (status updates)	2639
Mood posts (like status but visual)	1554
Blog posts	324
Pages (wikis)	303
Bookmarked items (links)	64
Events	22
Files	770
Polls	19
Responses	323
Feedback	52

In the space of nine months, student activity and engagement using a school's Elgg platform increased dramatically. Other schools had very similar experience of the Elgg and other technologies for engagement. See case history on page 28.

Benefits to students

'We know that pupils find it easy and enjoy the immediate engagement,' says Sian Morgan. 'It's a very positive tool.' A range of web 2.0 tools supports the work of a new student voice group, SALT (Student Action on Learning and Teaching). This has developed more specifically into the use of social networking technology to facilitate the students' work.

Student co-construction of learning

More than this, student co-construction is integral to the application of the new technologies. Students are leaders of their own groups and so decide which technology they use and how. Many students in the innovation fellows' schools chose to focus on the Elgg platform as the best fit for their needs and purposes. Students are engaged in improving learning and teaching in the school in a more systematic way than before. They undertake their own research and work closely with teachers to improve aspects of learning and teaching in their schools. The students involved in these projects often report feeling more listened to and empowered to become agents of change.

At Amman Valley School, Damian Donnelly reports, student representatives have become regular users of the Elgg software both within the school and with four other secondary schools in England and Wales. 'The students were highly motivated, very enthusiastic and enjoyed their online collaboration both within and between schools,' says Damian. The platform of tools available with this technology facilitated easy online collaboration on a range of issues involving all year groups. They found chat, message boards and blogging particularly useful. Feedback on the platform has enabled co-construction of these features and further suggestions for site redesign.

The innovation fellows in the Welsh Connection collectively identified the key emerging patterns:

- Students are able to engage with platforms more easily if they closely resemble their own social usages (eg Elgg can be themed to resemble

Facebook, whereas Google Apps has a more business-focused model in mind and so is less easily adopted by school students).
- There is a 'critical mass' (minimum number) needed for a social network to be used effectively and in a sustained way (the fellows are still working on determining what this number is).
- Students must enjoy using the tools or they will not engage. Student ownership and co-construction leads to increased and more effective usage. Those students who have been more heavily involved in co-construction have more quickly and fully adopted the technology as part of their everyday practice.
- Students are able to have a positive, meaningful impact on the standards and pedagogy within a school if they are given appropriate training, and also the support and tools available through web 2.0.
- When a school provides a platform for the use of social networking tools to enable effective student voice, the students realise that the school is genuinely interested in their ideas rather than 'tokenising' them.

All the innovation fellows, and very many of their colleagues and school partners, have found these innovations have engaged both students and staff in their schools and beyond. Students have realised that indeed they are listened to within the school and many are taking a more active role in the running of their schools. Their web 2.0 skills have developed 'enormously' to better prepare them for the 21st century workplace, enabling them among other things to evaluate their own learning and give teachers constructive feedback. Sian Morgan concludes: 'I believe the impact of the initiative will go far beyond what was initially intended. It will have an impact on the systems, structures and ethos of the whole school, as well as the models of CPD used within the school.'

The understanding and application of these technologies has led to increased collaboration within and between schools. Following demonstration of the Elgg, many teachers, school leaders and LEA advisors were able to see how it would provide solutions to a wide range of in-school issues.

Providing an online identity for a feeder primary school on the secondary school Elgg reinforced cross-phase continuity and the sense of community. This will enhance KS2/KS3 transitions and provide a new route for e-buddying.

Despite the research focusing on a particular platform (Elgg), Damian Donnelly points out that features such as blogging and micro blogging, file upload, message boards and chat – all of which lend themselves to different pedagogical uses – are also available with other software. 'The obvious advantage of the current platform is central provision of all these features,' he notes. Other work by this group includes writing and pioneering a patch to link three pieces of open source software together, creating an educational tool that would work as an e-portfolio, a VLE and a safe social networking site for learners.

Amman Valley School is integrating the Elgg with Moodle so it can be incorporated into the teaching curriculum. And they are now extending the action research in a number of directions:
- Uptake and replication via Carmarthenshire LEA (to which Dr Donnelly has been seconded as strategy officer to extend this work throughout the authority)
- A pilot for KS3-5 by a secondary PE teacher's network
- Supporting professional learning communities (PLCs) of subject teachers
- Deepening use at KS2 in a primary school
- Creating an Elgg supported learning community (KS2)
- Development of iNet Wales regional student voice Elgg platform.

The professional development for teachers involved in this work has been significant. Sian Morgan notes: 'The fact that students were able to use the new technologies in school also had a knock on effect on my own teaching and the teaching of others within the school (more integration of web 2.0, more reflective practice, more incorporation of student voice, more student co-construction).'

Case history: St James School, Exeter

How social networking enhances learning and student voice

For Stephen-Lee Farmer, a member of the Welsh Connection group of innovation fellows from St James School, Exeter, a strong reason for focusing on the educational value of social networking is that students are already 'self-trained' in how to use the software. 'They use social networking all the time – but normally they only use it for socialising. This ability can be used to enhance learning and their futures as citizens of the 21st century.'

At St James, staff and students use social networking to:

- raise engagement
- bridge the home/school divide
- teach e-safety
- improve literacy and communication skills
- strengthen student voice and student leadership
- facilitate partnership between schools.

Using social networking tools within the classroom has facilitated a number of important outcomes, Stephen-Lee explains. 'The issues of e-safety and netiquette are very important in today's society. Using the open source software Elgg within the classroom has allowed these topics to be demonstrated and tested safely. Students can make mistakes and learn from them, without any dangerous consequences.' The Voice (the name the school has given its Elgg) is used a lot for homework: 'it's really influential, I discuss their Voice work in the following lesson.' In another example, he describes how, making a conference presentation about St James' use of the Voice, 'I was able to chat to the kids back at school as part of my presentation.'

One very important element of the use of this technology is feedback. 'Students love instant feedback and they enjoy giving feedback to each other.' Using group discussions and then displaying the results on the school's website allows all students to have a voice and share their thoughts. It allows the more able students to refine their literacy and written skills, and the less able to scaffold their responses, using previous responses as guidance. In this way the social networking media facilitate peer tutoring and self/peer assessment.

This instant feedback is also evident with commenting, whether it be commenting on a wire post (similar to a tweet, using 140 characters) which has been used to define a key word or for a mini plenary, or commenting on a file that has been uploaded or a bookmark/link that has been created.

Social networking has really strengthened group work and allowed students to work outside school, developing more mature approaches to their work and their involvement in school, Stephen-Lee and his colleagues have found. He gives these examples of co-construction and student leadership:

- Year 8 students gave a presentation at the Plymouth E-Learning Conference in April 2011, on the school's use of Elgg, using the Voice to construct their presentation.
- A Young Enterprise group used Voice to communicate and organise their group. They sold shares in their cookie cutters business and produced cookie cutters to sell both within and outside the school.
- Many other groups at St James, relating to particular interests, have been set up and managed by students using the social networking sites and skills they have developed.

A recent survey at St James showed only 12% of students had not used the Voice at home and were not bothered by this; 6% hadn't but said they would love to. At the other end of the scale, 20% used it 'all the time' or 'lots'.

Stephen-Lee and his colleagues have seen greatly increased engagement and collaboration in lessons, and higher rates of completed homework, with higher grades in ICT-related assessments.

It is clear that a major factor is the degree of ownership students have of the social networking in school. This model of 'devolved ownership' has enabled the project to scale upwards. It has increased the capacity of all users to develop and build on their collaborative environment.

New technologies department

As part of the innovation fellows project that started in 2009, St James set up a New Technologies department, with Stephen-Lee promoted to lead it and become a member of the school's senior leadership team from September 2011. As such he has responsibility for the school's VLE, its social network Voice, the school website, and for developing further uses for the new technologies, including engagement with parents. In addition to social networking St James is introducing mobile technologies and games-based learning. It maintains Twitter, Facebook and YouTube accounts to enable interested parties to connect and communicate with the school.

St James has become an ICT Register Advocate school within SSAT. Its innovative approach also secured a grant of £1000, which will be used to train more Elgg ambassadors at St James to work with five local primary schools, among others.

'We aim to implement Elgg social networks in each of the primary schools,' says Stephen-Lee, 'and the Elgg ambassadors will train their staff and students in how to use it.' As an ICT Register Advocate school, St James will host visitors interested in using social networking in their schools, and will train other schools via consultancy or training days.

International dimension

Following a consultancy visit to Oregon by Stephen-Lee, St James is also linking with Oregon University and Traverse City District Schools. It is now piloting a 'global issues' course with Michigan Virtual University, involving students from Michigan and the UK using Moodle (moodle.org) and Elgg, taught via a 'blended learning' model that combines direct and online communication. St James staff set up the Americans' social networking site, which is quite distinct from the school's. To be safe and secure, Stephen-Lee points out, 'you should not let too many outside people into your walled garden. A network for a tight-knit community is safer.' Musing on this development, he comments, 'We're the world leaders in this now, apparently!'

The Voice is now used more than the school's VLE. Stephen-Lee's aim is for it to be used in all subjects: 'We might take the Elgg into the VLE so all teachers will use it.'

Examination results in the subjects that have made most use of the Elgg have risen strongly, but as Stephen-Lee concedes, it's difficult to distinguish how much of that is down to the stimulation of the developments using the Elgg: 'there have been lots of other initiatives too in this period at the school, so you can't really pinpoint cause and effect. But for two years running we have achieved 100% A*-C in GCSE ICT.'

Year 7 students comment on the school's use of Elgg

'The Voice is like a Facebook account, except you know who you're talking to, and it's safe.'

'We talk to friends about our schoolwork. I've got links to my website.'

'We're making groups that people can join and stuff.'

'There are not really any bad bits about it. It's all cool.'

'You can get stuff you need. It's always there. You don't have to run around asking people, and you don't have piles of paper you can lose.'

'I go home and see on Voice if there's anything I need to do. I can easily see how to use different tools. I probably know more about this now than my dad!'

How St James School's social network usage has developed

	Feb-Jun 2010	Jul-Aug 2010	Sep 2010-Jun 2011	Percentage increase over whole period
Users (students and staff)	332	576	755 (inc. 88% of students)	127%
Groups	46	300+ (edited to 23)	127	176%
Messages	579	2945	[stopped counting at 32,849]	∞
Discussion topics	55	136	497	>800%
Wire posts (status updates)	166	682	4055	>2000%
Mood posts (like status but visual)	-	15	2221	1470%
Blog posts	73	211	305	>300%
Pages (wikis)	-	48	478	895%
Bookmarked items (links)	24	67	257	970%
Events added to calendar	26	26	107	311%
Files	116	512	1305	1025%
Polls	-	-	28	-
Reported items	-	-	619	-
Feedback	12	16	48 (using plugin)	300%

3

Building school capacity and CPD with web 2.0

Continuing professional development (CPD) and building schools' internal capacity were key elements in the work of all 19 participants in the Innovation Fellows programme; but one group made it their particular focus.

Introduction and summary

All of the innovation fellows in this programme found the CPD it represented was among the best they had ever experienced. Indeed, 15 of the 19 fellows were promoted or had significant enhancements to their professional roles as a result (see panel on page 6). A number of them also worked beyond their own schools – with other schools, local authorities and higher education institutions in the UK and in one case the USA.

Two of the fellows, however, made this the main focus of their innovation projects, along with exploring and applying other benefits from web 2.0 technologies. A key driver for change in this context was to use the knowledge, expertise and enthusiasm of generation X and generation Y people in schools – the younger staff and the students (generation X is widely considered to be those people born between the mid to late 1960s and the late 1970s, and generation Y those born between the mid 1970s and the mid 1990s).

These two innovation fellows sought to build their schools' internal capacity through harnessing interest, knowledge and skills in modern technologies.

Characteristics of generation X and generation Y learners	
Generation X	Generation Y
■ Control	■ Enablement
■ Multi-tasking	■ Quick-switching
■ Hierarchies	■ Networks
■ Command	■ Collaboration
■ Private	■ Public
■ Broadcast media	■ Interactive media
■ Audience	■ Critic
■ Top-down	■ Bottom-up
■ Work as work	■ Work as fun
■ Sequential learning	■ Non-linear learning

Their hypothesis was that giving learners and mentors/teachers the tools to collaborate beyond the constraints of time and space would empower them in promoting co-construction by staff and students to harness 'next practice'. This would create great opportunities for further CPD and build schools' capacity to accelerate and enhance development of their leadership and teaching.

It worked. At Homewood School, innovation fellow Paul Hanson's work with early adopters of web 2.0 technologies (both staff and students) led to: planning and assessment materials being available online for the whole school; improvement in delivery of CPD to staff; a collaborative design by students from different departments winning first prize in the British Interactive Media Association's Digital Schools Challenge; and Paul's promotion within the school to become principal teacher of English.

And at Haberdashers' Aske's Hatcham College, the redesign of the education system resulting from innovation fellow Richard Farrow's project on building capacity through CPD received a rating of 'outstanding' from no less than three sources: the school's improvement partner, Ofsted, and an assessor for the Inclusion Quality Mark. At the end of his innovation fellowship, Richard was promoted to vice principal in this school.

'We now have a peer-to-peer programme combining primary and secondary.'

Learnings about building school capacity and CPD with web 2.0

School leaders might like to consider:

- Identifying 'generation Y' staff who can initiate and lead the use of social internet technologies to benefit students' education
- Seeking ways to encourage individual initiative, professional/managed risk-taking, and increased willingness to take responsibility among students and staff alike
- Adopting non-hierarchical approaches to innovation, for example by allowing less experienced members of staff to lead innovation when appropriate
- Seeking every appropriate opportunity for staff to develop and grow their capabilities – and then to apply them.

Practitioners in schools might like to consider:

- Exploiting the fact that both teachers and students can benefit from learning together and using the new technologies to aid collaboration and creativity (encouraging enquiry)
- Taking opportunities to innovate and to lead, especially in areas where they have particular skills and interests that can be used to enhance education (action research-based CPD)
- Working with students to make productive use of web 2.0 technologies – and the fact that sometimes students are initially more skilled than their teachers in this respect
- Being open with their students that they, too, are learners; sharing the learning journey
- No matter how senior or experienced they may be, seeking continually to increase and enhance their skills as teachers, learners and leaders in education.

Web 2.0 helps integrate phases and deliver CPD

Richard Farrow,
Haberdashers' Aske's Hatcham College

Haberdashers had recently been made an all-through school by inclusion of a primary school. This meant that the middle leaders group expanded from 40 to 60. Engaging that many people was a significant challenge, particularly as this group, which includes heads of year, department and house, 'exercises the biggest influence of any group in the college,' Richard Farrow explains. 'Until then our in-school CPD had been largely "sage on stage". We needed to explore ways of engaging younger staff and working with the new technologies, especially web 2.0, which itself is a form of pedagogy.' It was his responsibility to lead this process, and he found the innovation fellows programme very helpful in doing so.

'We have made a positive change as a college, from CPD as something that was done to you because someone higher up thought it was a good idea, to collaborative professional learning. We now have a peer-to-peer programme combining primary and secondary. The Hatcham Innovation Unit, which I chair, has provided the key people to make sure this worked across the college.'

'For example, advanced skills teachers are now being used across phases. We have had consistently strong feedback from our school improvement partners, endorsing this cross-phase work. And a recent Ofsted report on the PE department, which again had been exposed to these new approaches through the crucial work of an AST, was rated outstanding across all areas.'
'Using ning and other web 2.0 technology helped us a lot, particularly in assessing pupil progress (which we simply call levelling) across the primary and secondary phrases. These were early days in our all-through existence, and we had different sites and different timetables. Using the ning we could communicate and have meetings without being tied to particular places and times of day. Thanks to that, we can now ensure a consistent all-through timetable. And from virtual collaboration has come physical collaboration: groups that have worked well together will make the time for collaboration.'

Richard puts the Innovation Fellows programme into the context of his 15 years of teaching and exposure to a variety of CPD experiences. He is clear that the programme gives 'considerably more effective opportunities for reflective practice, networking with like-minded colleagues, access to leaders in academic research and a strong steer to relevant, leading edge publications. Better still, engaging in collaborative practice develops professional bonds that are unlikely to be broken – and the alumni element ensures you remain networked.'

Personal professional benefits

Richard is now using the strategies and models developed as an innovation fellow to tackle the issue of coaching in the school. Numerous CPD events during the IF programme, he says, has encouraged the fellows to deliver CPD to colleagues of high standing within the academic community, which has made dissemination at a local/school level more straightforward. The resulting redesign of the school's system 'has been fully endorsed by my college leadership team and received as outstanding by our school improvement partner, Ofsted and our Inclusion Quality Mark assessor.'

'I really endorse this programme.'

Breaking down the boundaries of time and place

Paul Hanson, Homewood School

At Homewood School, the innovation fellow's research focused on harnessing the potential of the 'three Cs': creating, collaborating and communicating using new media technologies, specifically SmartAssess' RealSmart tools (www.realsmart.co.uk) and free tools such as Jing (www.techsmith.com/jing.html) and RealPlayer (uk.real.com).

'Although it is still too early to claim that the innovations have had a marked impact on achievement and attainment, it has formed a significant thread within an ongoing reculturing of pedagogy at the school,' says Paul Hanson. Driving the innovation was the notion that in encouraging staff and students to use digital technologies in and out of the classroom, 'we might tap into patterns of behaviour and participation which exist outside of the school. In doing this, we intended to engage hard to reach students – and staff – whose relationship with learning appeared to require reinvigorating.'

The 3Cs learning approach focuses on breaking down the boundaries of the traditional time and place structures of schools to increase students' opportunities to communicate and collaborate with each other and with teachers. 'Given that some students are reticent to share their ideas and learning verbally within the classroom, we were interested to explore whether digital communication technologies might allow them to overcome these inhibitions.'

In order for this to work, Paul and his colleagues recognised the need to 'upskill' teaching and associate colleagues, so they could support learners in using the technologies in and out of the classroom.

A significant enabler, they found, was to identify early adopters among both staff and students. Not only did these people use the technologies in their teaching and learning; they also acted as active promoters, sharing resources and teaching others. This was further supplemented by weekly, voluntary Inset sessions and a series of learner-produced video podcasts. Departments in the school are now required to centralise planning and assessment materials online, giving access to both staff and students. This helps to overcome any continuing reluctance to engage with the technology.

Similarly, the RealSmart technologies were used to deliver staff development sessions, with all materials and presentations shared online. 'It enabled staff to act as hunter/gatherers of information, clarifying and contributing via the in-built blogging spaces,' Paul explains. These presentations and subsequent discussions are still available for new colleagues to the school and for reference in ongoing discussions between colleagues. The collaborative approach has helped the school to support succession planning and co-constructed approaches to the development of teaching and learning resources and activities.

The use of the school's RealSmart site rocketed from zero hits per week in the summer of 2009 to over 12,000 per week by Christmas of the same year. 'Naturally, we were very pleased with this, even though a generous proportion was generated by heavy users within the staff and student bodies.'

A number of Homewood's history students used RealSmart to design an online version of a museum for a steam railway society's renovation of a historic rail van (the van used to carry The Unknown Warrior, Edith Cavell and Captain Fryatt to London at the close of the First World War). In collaboration with media, music, maths and graphics students, many of whom they had not met face-to-face, the historians' design was entered in the British Interactive Media Association's Digital Schools Challenge, for which the students were awarded joint first prize at Channel Four's television studios in London in summer 2010.

'The continuing use of these technologies by staff and students is constantly eroding the boundaries between in-school and out-of-school learning. We believe 3C learning approaches applied with these technologies will help improve engagement, participation and achievement.'

Personal professional benefits

'The innovation fellowship has had a significant impact on my professional development,' says Paul. 'I do believe that my experience of working with SSAT and the other schools involved, especially my collaboration with Richard Farrow at Haberdashers, contributed to the school's decision to appoint me to the post of principal teacher of English.'

He concludes by noting that the challenge of sustaining the 3C approach and making full use of web 2.0 continues: 'permanently embedding it will require considerable intervention if "dips" and "slips" are to be avoided.'

Effective CPD and web 2.0: the innovation fellows' conclusions

Two of the very many questions the innovation fellows addressed during the programme were: 'What does good CPD look like?', and: 'Why are web 2.0 technologies and behaviours of value to professional development?' The fellows agreed the following key characteristics.

Effective CPD should:

- involve colleagues working together from the same institution
- involve colleagues working with others from different institutions around an area of common interest
- be focused on learning and pedagogic/classroom practice
- be practitioner designed and led/evidenced
- be experiential, supporting reflective practice
- be collaborative (non-hierarchical) and involve collective responsibility
- be flexible to encourage access and experience
- be modelled by others
- be supported (including mentoring and coaching from within one's own institution if possible)
- offer sustained, structured and cumulative opportunities for reflective practice
- be highly enjoyable and intrinsically motivating (relevant to one's area of work)
- be affirming, and challenging

A group of the fellows also rated web 2.0 technologies and behaviours as aids to CPD. In order of importance, they were:

1. engage younger staff
2. promote digital literacy
3. encourage interaction between staff and students
4. are collaborative
5. are about networks, not hierarchies
6. encourage fun
7. decrease 'distance' between workplace and home
8. are about discovery, not instruction
9. are learner-centred, not teacher-centred

Other innovation fellows on the CPD benefits they have gained

Learning networks

Colleen Young, Newstead Wood School

'The Innovation Fellows programme was the ultimate in CPD for me personally. I have learned more about learning and myself as a learner, collaboration, technology, writing and reflection, and creating a personal learning network.'

'Learning: a key point is that teachers can model learning only by experiencing it. My innovation fellows Fridays offered me time for reflection without interruptions. I studied Bloom's Digital Taxonomy, for example, which helped me focus on what the students are learning rather than on the tools themselves.'

'Collaboration: the excellent online collaboration between members of our team has enabled us to practise team skills.'

'Technology: I have learned how to use a large number of new tools, and consider how they can help students to learn.'

'Writing and reflection: I wrote a weekly blog for other fellows to read and created sites for staff and students. Students wrote stories on Storybird for example, which has certainly been motivating for them. Web 2.0 tools have given us all, teachers and students, a sense of ownership.'

'Creating a personal learning network: perhaps most important of all is being part of an online community.

I'm now familiar with many useful blogs online, belong to many Diigo groups (http://www.diigo.com/profile/colleenyoung) and online communities (eg www.classroom20.com), also Twitter (being very selective on who I follow).'

Enabling collaboration

Rebecca Honeyman, Priory Sports and Technology College

'I feel this programme has really opened my eyes to education, how much I have still to learn and what the future may hold. I am very much more aware of my own strengths and weaknesses. I have taken a lot of advice from other fellows and given some in return.'

'I am now leading creative learning and teaching in school and have responsibility for offering training to university students and trainee teachers. This is being rolled out to our primary schools also. In the future I will be more confident in taking risks. As Professor Yong Zhao stated in one of our Schools Network conferences, "If you're not upsetting someone then you're not innovating."'

'This programme has allowed me to be a learner again and appreciate the need for guidance and modelling. My fellows have been effective coaches and I need to express my sincere thanks to them for this. The IF process has allowed me to structure my thoughts and experiences and really appreciate how difficult it must also be for pupils to reflect on their work.'

'If you're not upsetting anyone then you're not innovating.'

Professor Yong Zhao, quoted by Rebecca Honeyman

Skills for the future

Christian Kitchen, Aberconwy School

'Being able to take the lead on whole school Inset has developed in me characteristics like collaboration, creativity, stubbornness, being thick-skinned and looking for the positives in any situation. I hope these skills will stand me in good stead in the future!'

Strong, informal coaching

Sharon Wallwin, Yewlands Technology College

'Our group of innovation fellows have provided each other with strong elements of informal coaching and mentoring as we have worked closely together and developed our understanding of each other's schools. Through working with others to bring about new ways of working, I realise that a good change manager or leader needs to be able to convince people with tangible evidence of success – so reluctant individuals are enabled to take on change.'

Modelling independent work

Alastair Chambers, Kingstone School (now part of Horizon Advanced Learning Centre (ALC))

'Through collaboration with colleagues who have implemented their models of project-based learning in very different ways to Kingstone's cultural studies programme, I have come to recognise that there remains huge potential for further innovation within the subject that we've created.'

'My action research and the workshops I've attended have filled me with practical ways to enable formative assessment. For me the next phase will be to take these and create innovative tools to share with colleagues in my own school and beyond. Participation in the IF programme has given me the confidence to take a lead role in gathering and disseminating the pedagogical knowledge that will undoubtedly make a profound difference to our learners.'

'Through the IF programme I have learned to work more independently; setting myself goals and managing my own time more effectively. I am now better placed to help young people to learn through PBL as I have embarked on a learning journey that reflects theirs in many ways.'

Supporting other schools

Chris Coleman, Conyers School

Being part of the innovation fellows network has allowed me to work on a larger national scale supporting other schools, and to explore different ways of teaching and supporting learners using technology.'

'In addition the programme has provided huge motivational drivers, working with a highly engaged and innovative team of teachers of various subject disciplines and expertise. The constant drive to research and explore has allowed me to keep moving forward, exploring technologies at the forefront of education.'

My role in the innovation fellows has also spread to others at Conyers and beyond. The programme has had a clear impact on the priority given to the use of technology in every department.'

Liberation from status boundaries

Sian Morgan, Barry Comprehensive School

'Working with the other fellows, you can liberate yourselves from status boundaries – ego and possessiveness are taken out of it. Instead we had collegiate leadership, all taking an equal responsibility and ownership of what we were doing. At first I thought the title innovation fellow was cumbersome, but now I realise innovation is indeed a part of every teacher's job. We should be trying to use action research in everything we do.

'The excitement, enthusiasm and passion the work has ignited in me has also proved to be infectious, with many colleagues wanting to find out more and get

involved as well as volunteering to assist with the work in school.'

Sian is student voice coordinator for the school, which now has higher status including a more central role in the school's leadership and development planning. She admits to having become 'somewhat of an evangelist' for web 2.0 and student voice within the school. 'I have also been developing my research abilities,' which is helping the MA in leadership in education she has started. 'The IF experience has supported my development, it's so valuable.'

Most significant CPD

Jessica Midgley, Bradford Academy

'I am absolutely passionate about pedagogy and the psychology of learning. I genuinely feel that the CPD I have received this year has been the most significant and beneficial in my career.' One of its key characteristics, Jessica feels, is that 'I've been able to select the areas of my personal interest and delve deeper into them. Carrying out my own practical research has allowed me to evaluate and reflect on my own learning.'

'Having the Fridays free for fellowship work has allowed us to visit other schools and observe innovative practice in action. This has been much more beneficial than simply reading a case study or blurb about a particular school.'

'I've really enjoyed the "converge-diverge" way of working. Our segmented approach was appropriate for our work as each school has its own demands and demographic. This meant that we could develop our own personalised work while offering each other constructive criticism and reflective questions. The group also has no "leader" or hierarchy, regardless of our respective positions within school. This allowed for total freedom in terms of open discussion. It meant that we all felt an equal amount of responsibility for our work individually and as a group.'

'The way the project was set up, with termly IF meetings and regular email updates, has kept me motivated throughout the year. And the fact that the project has been my own, with regular feedback from others in the group and from SSAT, has been affirming and enjoyable. This has enabled me to reflect on how project-based learning can be used as a motivational tool as well as developing skills and knowledge.'

4

Project-based learning: developing the skills as well as the knowledge

This group of innovation fellows, based mainly in the north of England, chose project-based learning (PBL) as a vehicle to develop and assess lifelong skills in their students.

Introduction and summary

These fellows sought to develop students' desire and ability to question, analyse and decipher, in order to equip them for the 21st century. Project-based learning would also deepen the fellows' own understanding of assessment processes to support staff in tracking learning skills alongside attainment. As Professor David Hargreaves has written: 'It is impossible for teachers to ensure that every lesson achieves the ideal combination of deep engagement and deep learning. It is easier to do so with projects, because many features of the best extracurricular events are also built into project structures.'

Criteria for deep engagement and deep learning

Deep engagement

1. The task is big and authentic
2. The outcomes are worthwhile
3. Completion takes a long time
4. The task needs time out of school
5. Completion depends on teamwork
6. The final outcome is celebrated

Deep learning

7. The task is co-constructed
8. Multiple intelligences & creativity used
9. Two or more disciplines involved
10. Consequential decisions are made
11. Help and advice from adults needed
12. High levels of feedback needed

[1]Hargreaves, D, *Deep Learning - 2: why should they learn?* SSAT, 2008

The 2012 SSAT National Conference (Liverpool ACC, 4-5 December 2012) exemplified this approach when 25-year-old Emily Cummins (pictured) told the audience of some 800 school leaders how her A-level project had led to her designing a refrigerator that can be built and used in remote areas with no electricity. Having spent her gap year in Africa seeing her innovation being made and used, she is now embarking on further ambitious projects and aiming to inspire children in schools to undertake similar projects.

A number of the fellows maintain the project-based approach contributed to markedly improved results in the students involved, although it is not usually possible to prove that PBL was the sole or main cause of improvement. At one school, for example, all students involved achieved or surpassed their target grades. In another, one of the areas most involved in the school's PBL – mathematics – is, with English, responsible for a much higher rate of improvement than subjects generally. And the innovation fellow at Bradford Academy, a science teacher, ran a well-structured study that showed twice as many students using PBL achieved above-target results as in the comparable control group (36% vs 18%).

In addition, a number of the fellows found that students using PBL:

- enjoyed their lessons more
- developed relevant skills
- were better at articulating the skills they were working on
- could talk about their work with confidence
- were involved in the assessment process of their project and looked forward to the next project.

Some of the schools used their managed learning environment (MLE) to develop student e-portfolios – giving students ownership and enabling teachers to track students' progression in learning skills. Some subject areas went on to involve students in co-construction of units of learning, for example by becoming 'lead learners' and taking part in the delivery of lessons to their peers.

They recognised a need to rebalance learning skills, which they felt were at least as important as knowledge in the curriculum. Engaging learners is crucial, particularly today, when young people are constantly bombarded with electronic information and distractions. PBL was seen as a way of making learning 'real and relevant'. If learners could articulate their skills and use them effectively, then taking a didactic approach to content delivery would be less appropriate or less needed – 'if you develop the skills, the knowledge comes with it.'

Learnings from this group of innovation fellows

School leaders might like to consider

- Seeking every opportunity to develop the skills and aptitudes young people will need for successful life in the 21st century, in addition to purely academic outcomes
- Making use of approaches such as project-based learning that can enhance skills and aptitudes as well as knowledge
- Recognising that collaborative learning between students, and between students and staff, can greatly enhance education in the school
- Seeking ways to encourage individual initiative, professional/managed risk-taking, and increased willingness to take responsibility among students and staff alike.

Practitioners in schools might like to consider:

- Exploiting the fact that both teachers and students can benefit from learning together and using the new technologies to aid collaboration and creativity
- Seeking to develop young people's skills as well as their subject-based knowledge
- Working to build students' ability to evaluate their own learning and identify where and how they need to improve – and making full use of social networking's potential in this respect
- Making appropriate use of project-based learning and other approaches that can contribute to a broader development of the young person for their future career and life, as well as their immediate education
- Tapping into students' out-of-school knowledge and enthusiasms to make learning more relevant, and more fun.

Approaches

While the PBL group agreed on the key principles and approaches, they realised that trying to do the same work in five different schools wouldn't be a very productive use of their time and energies. Each of the schools is very different, in terms of demographic, priorities and stage of PBL development. The innovation fellows programme allowed them to carry out a segmented approach to their work, coming together to evaluate, receive feedback and share ideas and developments.

At Yewlands Technology College in Sheffield, innovation fellow Sharon Wallwin found widespread concern among colleagues that the key stage 3 curriculum was 'not meeting the needs of many of our students.' Further, she found 'whole staff awareness raising was needed to enable us to broaden our thinking and practices for 21st century learning.'

A number of other innovation fellows found similar issues in their schools, and each approached their issues in a distinct way. During the course of their research they learned that for students to improve their skills they needed to know when they were using a skill (which in the early stages at least would involve the teacher telling them). Practical measures such as tips from teachers and rewards linked to skills were useful. To promote the value of skills, examples should be displayed prominently in classrooms. And students needed opportunities to use different skills in different subjects.

One example of the varied approaches used was at St Mary's Catholic College in Blackpool, where fellow Monica Fitzpatrick and her colleagues used PBL to deepen students' learning experience in order to:

- refine the quality of formative assessment
- construct meaningful cross curricular PBL within learning houses
- provide a whole school opportunity for all members of staff to plan, construct and deliver PBL in 'Wonderful Week'
- evaluate effective modes of assessment for learning
- establish a pathway for the following stages for implementing PBL.

The school held a session for sixth form staff to plan and implement PBL and develop metacognitive learning throughout key stage 5. Lessons are now 100 minutes, to 'allow for greater learning dynamics', Monica explains: a variety of teaching and learning styles within

each lesson, which could include a keynote statement followed by a task/project, with a 'guide on the side' to help weaker students. Under this system, outcomes are assessed twice each term. All the school's 'learning houses' are expected to provide feedback on their experiences with project-based learning and how it can improve learning gains.

All learners need to be able to demonstrate development of skills relevant for the 21st century workplace. This should include a love of investigation and the willingness to take innovative/creative risks in response to real life challenges, in Sharon Wallwin's view. Yewlands focused specifically on PBL in science, technology, engineering and mathematics. They considered that the skills and experiences students need to live and work in the 21st century include:

- teamwork and problem solving
- a love of investigation
- real life experience of the shop floor and industry
- feedback from employers/ organisations/ college of any deficiencies
- sustainable links with employers
- real life projects
- seeing the connection between study and the real world.

And all of these require 'removal of spoon-feeding at all levels'.

The school was restructured into six (then seven) innovation pods, responsible for developing projects within their curriculum/faculty areas that would be motivating and engaging for students and build on learning in other curriculum areas. Examples include:

- ICT combined aspects of the curriculum into projects linking content and skills into a learning experience.
- D&T developed its Christmas Fayre, with increased involvement from other areas and increased parental involvement.
- Humanities introduced six half-termly projects aimed at improving the quality of homework.
- Humanities also enabled student 'leaders of learning' to devise and deliver short teaching elements to students in another class (repeated across all year 7 classes).
- At a year 7 'ICT/Hums/D&T' showcase, parents were invited to see their children teaching demonstration lessons. This concluded with a buffet provided by a parent /student cooking group from D&T. The showcase was successful and was repeated across the whole school throughout 2011.

Outcomes

Measuring outcomes

Science teacher Jessica Midgley put her professional background to good use in evaluating the results of her PBL project and clearly demonstrating the improvements by comparison with a control group (see case history, page 50).

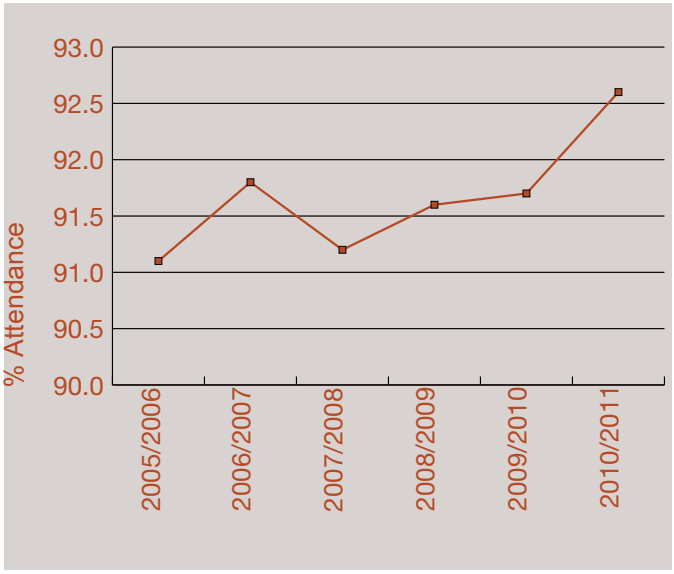
A number of the other innovation fellows can also point to improved results in their project areas. For example, Monica Fitzpatrick's PBL approach in an English Language AS course last year resulted in all students achieving or surpassing their target grades.

At Yewlands, Sharon and her colleagues believe their approach to PBL has contributed significantly to the recent marked improvement in GCSE results. Significantly, one of the areas most involved in this school's project-based learning – mathematics – is, with English, responsible for a much higher rate of improvement than subjects generally (see box). Attendance and exclusions have also improved since the introduction of skills for learning, further accelerated by the innovation fellows' project work.

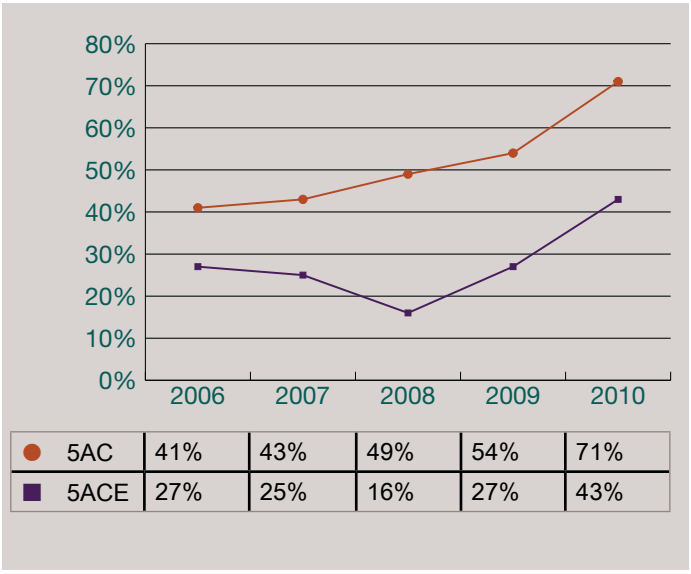
Project-based learning boosts maths results

	2006	2007	2008	2009	2010	Change 2009/10	Change 2008/10
5+ A* - C (inc E&M)	27.0%	25.0%	16.0%	27.0%	43.3%	+59%	+169%
5+ A* - C	41.0	43.0%	49.0%	54.0%	71.3%	+31%	+45%

Whole school attendance



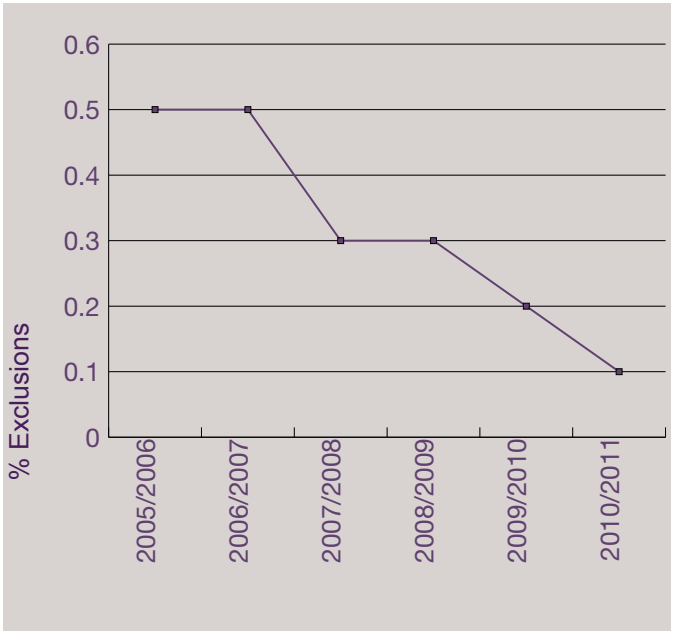
Yewlands 5AC & 5AC (Inc. E&M)



5AC	41%	43%	49%	54%	71%
5ACE	27%	25%	16%	27%	43%

2009/10: 5AC improved 31%, 5ACEM improved 59%
2008/10: 5AC improved 45%, 5ACEM improved 169%

Whole school exclusions



Qualitative results

The fellows' research into project-based learning was much influenced by the work on assessment for learning of Dylan Wiliam, among others. Alastair Chambers of Kingstone School, Barnsley, noted: 'What my work has shown latterly is that we must combine short-term formative assessment with longer-term strategic assessment.'

One of Dylan Wiliam's most valued innovations is teacher learning communities, in which a small group of teachers (eg within a school) each work on specific plans for changing their classroom practice. They meet together regularly to review progress and refine their plans.

So Kingstone has a teacher learning community, including seven NQTs, looking at strategies for formative assessment, trying out different techniques and observing each other in class. For a longer-term strategy they use rubrics (sets of criteria and standards forming the basis for judging students' progress towards a learning objective). 'They help students to see what they can achieve and what they need to do to meet the task requirements,' Alastair explains, 'so they can distinguish between describing, explaining, analysing

and evaluating. The production of a rubric is student-led: I produce a pro forma, then they think how to construct the success criteria and give that back to me to formalise for the class to use.'

'This leads to metacognition (learning about learning) for the students – and for me as the teacher. They can demonstrate the skills, and sometimes I recognise where I need to make the task clearer. There's a lot more effective work going on now, it's a huge step forward.'

The use of rubrics is spreading widely across the school, as Alastair contributes to Inset days and works with other teachers.

Benefits to students

One of the presentations the innovation fellows took part in as a result of the programme was by Alan November, international leader in educational technology – who was inspirational, many of them agreed. Project-based learning can help to meet a number of the aims November outlines, such as fostering critical thinking skills, peer learning opportunities, a sense of purpose to inspire motivation, and links between the social and the pedagogical. The projects by this group of innovation fellows showed how students benefit from all these aspects.

For example, Alastair Chambers at Kingstone discovered a dramatic improvement in his students' ability to articulate what they need to do to improve. 'When (at the start of his project) I posed this question to the students I have to say I was underwhelmed by their responses, which were typically of the "talk less in class", "work harder", "concentrate more" variety. Vague, and not particularly insightful. Using the rubrics, they can now show me where they're up to. Compared with the start of the year, the year 7s I teach cultural studies to are much better able to articulate what they need to do to improve.'

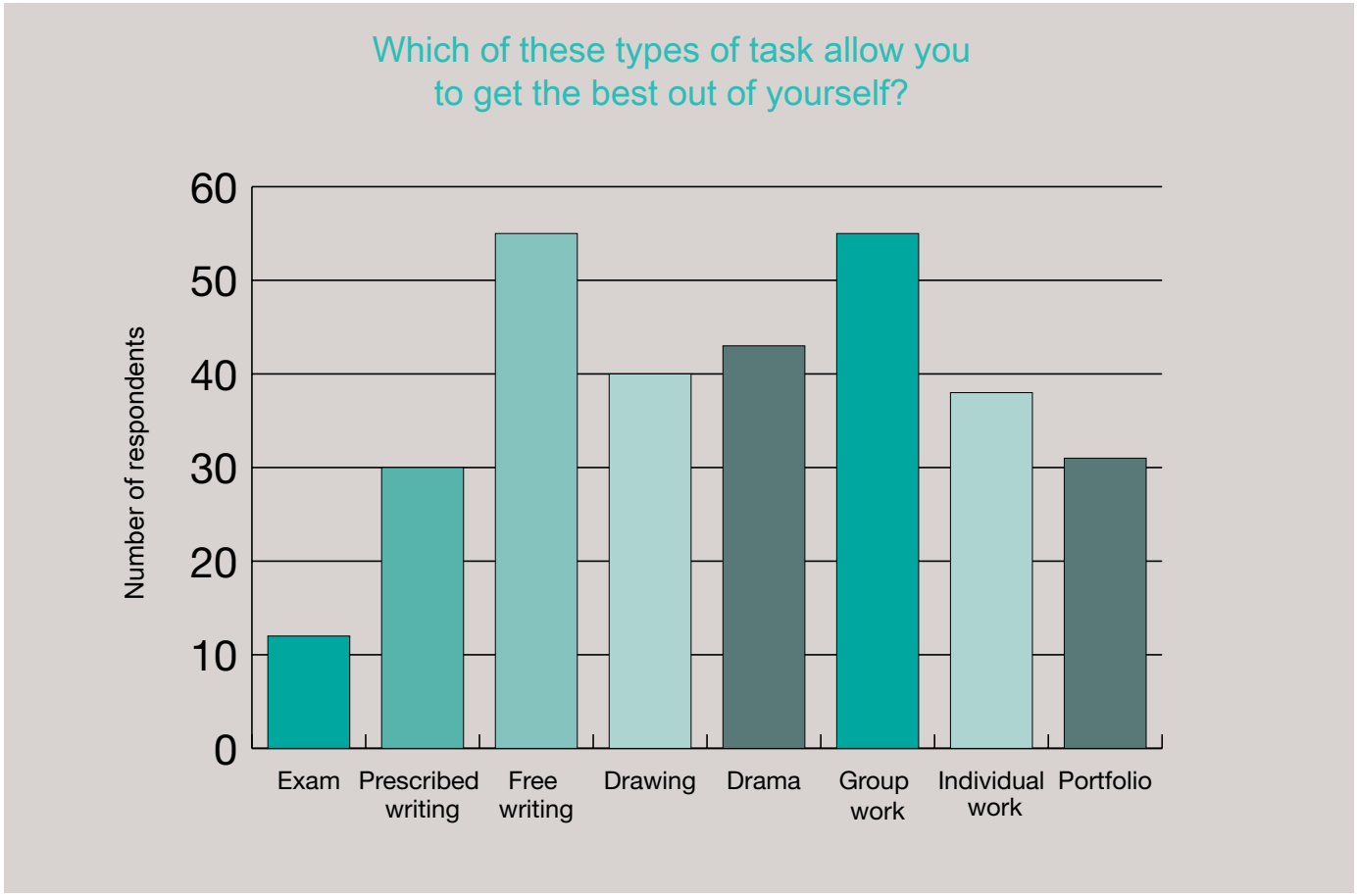
'The results I think justify spending a whole lesson evaluating a particular piece of work by the class – their strengths and weaknesses, and how they can make progress on similar kinds of work in the future. They are able, for example, to explain how they understand, in relation to the Gunpowder Plot, why the Catholics decided to try to blow up the Houses of Parliament. They're using their own words, but showing a pretty high-order analysis of their work.'

'The potential benefits of this approach to learners are huge; young people will see more continuity in the way that teaching and learning takes place and they will see more relevance and connections in the work they do across school.'

Towards the end of the project 90 Kingstone students from years 7, 8 and 9, most of whom had produced e-portfolios of varying quality, took part in a questionnaire survey. The sample was mixed ability, including students with SEN and those identified as gifted and talented. Their responses clearly showed that they valued highest the more individual and interactive tasks, which are associated with project-based learning (see figure).

'The cultural studies programme… offer[s] topics and themes which students find relevant and stimulating. A linked and imaginative approach to assessment is contributing to developing higher aspirations and skills for life.'

Ofsted, September 2010.


Which of these types of task allow you to get the best out of yourself?
Number of respondents
60
50
40
30
20
10
0
Exam
Prescribed writing
Free writing
Drawing
Drama
Group work
Individual work
Portfolio

Creativity skills grid used at Kingstone School, Barnsley

Area	Skills	Description of skills	Key: A - Always true T - Usually true S – Sometimes true N – Never true	Comment Write a brief comment on your overall performance in each area.
Problem solving	Exploring and questioning	I can ask questions and predict answers to them. I can find out information without being asked to.		
	Evaluating evidence	I can sort information into useful/not useful. I order my information in order of importance and give reasons.		
	Being objective	I look at more than one side of an argument and explore all sides equally.		
	Reaching conclusions	I can draw conclusions to original questions using my evidence and my own ideas.		
Making friends and working in teams	Taking responsibility	I have taken a lead in running a project or enterprise. I have discussed roles and responsibilities. I have completed what was agreed and reviewed my work.		
	Building on team strengths	I am able to listen to other peoples points of view and to build on their ideas. I use positive body language, expressions and gestures to encourage others to speak.		
	Managing the team	I am able to set deadlines and targets and stick to them. I am able to help others to monitor theirs too so that we meet our deadlines as a team.		
	Evaluating the team	We discuss what worked and what didn't and we learn from our mistakes so that we can improve in the future.		

Managing oneself and others	Be organised	I use a planner to keep a record of deadlines and progress. I can plan my time effectively.		
	Seeing things through	I don't panic when things go wrong, but try to find solutions to the problem. I never give up but keep trying new ways to achieve my aims.		
	Managing risk	I'm not afraid to try new things, but I do my best to analyse where things might go wrong and to put actions in place to reduce the risk.		
	Managing feelings and emotions	I can disagree with someone without losing my temper. I try to see their point of view even when I don't agree with it.		
Motivation	Collaboration	I listen well and encourage everyone in the group to take part in the discussion.		
	Finding solutions	I can break a large problem up into little sections which make it easier to work with.		
	Being persuasive	I can persuade people without shouting or dominating. I can use evidence and examples to persuade others.		
	Getting involved	I get involved. I don't complain and although I question, I remain positive and committed.		
Creative thinking	Imagination	I have lots of ideas and am unafraid to try them out.		
	Making links	I can show how my ideas link to the topic and find new ways of linking them to other topics.		
	Questioning	I don't accept just what I read or am told, but look for bias and draw my own conclusions.		
	Being curious	I am interested in the world and people and this makes me keen to learn more.		
	Challenging myself	I'm not afraid of getting things wrong; I know that I can learn from my mistakes.		
	Invite feedback	I welcome feedback from others, including my peers and take their comments on board to improve my work.		
	Share learning	I am happy to share my work and to help others to succeed.		

Source: Creativity, Culture and Education, www.teachingtimes.co.uk

Project-based learning opens teachers' eyes to students' potential

The merging of students into PBL groups according to stage not age or personal interest also opens up a whole range of possibilities and questions, coupled with some interesting opportunities for student leadership within groups.

'Applying what we had been learning as innovation fellows back at school was quite daunting,' recalls Amanda Wright of Seven Kings High School, London Borough of Redbridge. 'The head and senior leaders were thinking big! We trashed the timetable for the whole school for four days, focusing on questioning skills to test and develop the learning and creativity of both students and teachers. I video interviewed teachers before and after the event.'

'Some of the teachers worried beforehand that the kids would be naughty, but generally that didn't happen, and the teachers were surprised at how the students could work independently and structure their own learning. They had a sense of where they were going, and kept on track. The teachers ended up seeing the students in a different light.'

'The students had to come up with "big" questions, and then research the answers. Each small group had a laptop with access to the Internet, along with design technology and art resources if they wanted them. They put up their questions on a Why Wall and teachers would email them to offer help and expertise, not necessarily in their subjects.'

'The kids loved it (not all for the right reasons!). After the first hour most of them were best buddies with their groups. Some did struggle to see the relevance, finding the exercise too conceptual. But most committed themselves and got deeply involved in their team's work.'

'This year we repeated the exercise, but with some changes. The emphasis was on thinking skills and learning to learn, using De Bono's thinking hats. It was three days instead of four, and they were non-consecutive, over a period of two weeks. Again, nearly all staff and all students took part, apart from a few in the sixth form who needed to be in class. We made sure the students were in multi-year groups, and the teachers worked in pairs from different departments, and with different amounts of experience. We used a bit more structure than last year, because we had found that some of the weaker students had struggled and needed more learning support.'

'The head presented the brief in a video, telling the students she wanted them to design the school of the future. It should include the rules, systems, buildings, classrooms, resources, curriculum, and timing and weighting of subjects.'

'We displayed the stages the groups had got to after each day to enable them to react and develop their ideas. As the students discovered the knowledge and skills they would need to complete their designs, these were covered in the lessons in between the three days.'

The students themselves came up with the criteria to judge the best group efforts, and the winners presented their designs to the senior management team.

'It was brilliant,' Amanda concludes.

The experience of Bradford Academy was similar in a number of ways. Jessica Midgley says, 'the students told us that they have a lot more fun with the subjects, yet there is no detriment to the results at the end of the key stage. Responses to the questionnaires we administered showed that they enjoyed the projects – but also that they could describe much better than the control group what level they were at and specifically what they needed to do to improve.' As with Amanda Wright's work at Seven Kings, the learners themselves designed the assessment criteria for the projects.

'The longer term effect on our work with PBL has changed the way we operate,' says Jessica Midgley. 'I'm writing project-based learning programmes for every year 7 science class, which will still be subject-based, but incorporating skills.'

This has also had a positive impact on Kingstone's teacher learning community, which meets six times a year, and 'has really helped' the NQTs taking part. Alastair Chambers now leads the school's staff on performance assessment: 'What I'm striving to do is to ensure a widespread awareness of assessment techniques, so that people have these different techniques in their arsenal – and that they are reminded to use them.'

At Yewlands in Sheffield, Sharon Wallwin and colleagues have established 'a critical group of skilled staff, and we are now in a strong position to further promote PBL across our whole curriculum. Our aim is to ensure every teacher is able to use a facilitation-based approach to ensure more students have increased ownership and take more responsibility for their learning.'

The school aims to ensure 'an appropriate balance' between discrete lesson delivery and project-based approaches. 'We're aiming for 60% of curriculum time on project-based learning and 40% on discrete subject-based learning. Our S4L (skills for learning) framework is now fully electronic and online for staff and students to map and record their learning skills development. All KS3 students keep an e-portfolio, which reflects the progress they make, although this is currently being reviewed and developed.'

'Finally', she adds, 'we're developing a staff S4L planning tool, using a similar format, to provide teachers and pod areas with ideas for designing learning activities around specific learning skills.'

Case history: Bradford Academy

Evaluating the effect of project-based learning on curriculum knowledge

As a science teacher, Jessica Midgley of Bradford Academy not surprisingly used a thoroughly systematic approach in her research into project-based learning. As a result, readers could be confident that the conclusions of the study would be valid.

She used a test and a control group of the same types of students, taught the same material by the same teacher colleague, who did not know the hypothesis being tested. All students completed a knowledge-based test on the curriculum content covered in the trial. Then Jessica conducted sophisticated statistical analyses of the results.

She explained the rationale for her research: 'Traditional academic subjects were not using projects in school, yet learners can be taught through PBL and still gain content knowledge. I wanted to find a way of moving away from grading everything. All that should matter is getting better.'

For the content, Jessica broke down the KS3 curriculum into themes to form the bases for projects (eg: To Boldly Go, The Theme Park, The Murder, The Hospital). The scheme of work covered two years. She mixed content from biology, physics and chemistry to break down the barriers between the subjects and to help make links between them. She took advantage of assessment opportunities throughout each theme, based on APP (assessing pupil progress) rather than traditional level criteria, which are mostly knowledge-based. She mapped how APP could be assessed through all of the projects over the two years. Each project also focused on two PLT (personal learning and thinking) skills: one chosen by the class, the other a whole school focus for that half term. The class would design their own rubric for assessment of their final project product.

The thorough approach to this work included:

- Independent variable: one class received the project style, the other a more traditional science unit (covering exactly the same content)
- Dependent variable: a knowledge-based test to assess retention of content
- Control variables: both mixed ability classes, same teacher delivering both styles, same test
- Avoiding bias: teacher was unaware of hypothesis and aim of research.

After analysing the results of the knowledge-based test, and comparing it to the target grades of the learners using a Mann Whitney U Test, Jessica found no significant difference between the knowledge assessments of the two classes overall. But she did find:

- There were more learners on or above target

in the PBL group.
- The PBL group achieved more top score level 6s.
- Learners could discuss clearly the skills they had developed and what they would do better next time.

It is clear from this work that using PBL to deliver subject content is not detrimental to 'the amount or level of knowledge gained by the students,' Jessica concluded. And in fact, in the longer term the students doing the PBL tasks:

- enjoyed their lessons more
- developed relevant skills
- were better at articulating the skills they were working on
- could talk about their work with confidence
- were involved in the assessment process of their project and looked forward to further projects.

The research also showed the strengths and challenges inherent in project-based learning.

Strengths:

- collaborative planning (for staff and learners)
- enjoyment and depth
- 'real science' still involved
- learners become excellent self and peer assessors
- robust and rigorous research demonstrates the merits of PBL.

Challenges:

- planning takes a great deal of time
- staff must feel comfortable with the different pedagogy (perhaps needing training), and be able to 'let go'
- the approach was still subject specific – there was a need to draw links with other subjects, particularly technology and maths (STEM).