

MILO: Models of innovative learning online at Key Stage 3 and 14–19

Final report

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Introduction

“We’ve always tried to have a fairly low minimum computer spec for LeTTOL [the online course]; this is not about whizz factors, not about technology; this is about using the internet, it’s about pedagogy, it’s about making things happen.”

Tutor, The Sheffield College case study

‘... the assistant headteacher pointed to the need “to create a new meta-language for pedagogy”. The technology in Bridge Academy Online is “not particularly innovative... the innovation comes in the way you interact with [the learners]”.’

Assistant headteacher, Bridge Academy Online Case Study

This is the final report on research commissioned by Becta on new models of learning provision for Key Stage 3 and age 14–19: the potential of online learning.

This report thematically synthesises findings from the knowledge-mapping and fieldwork in relation to the original research questions outlined below. In conclusion, the implications for practice are outlined.

The aims of the research were to investigate the use of formal online learning at Key Stage 3 and age 14–19 in order to inform policy. The questions were:

- Is provision of formal online learning at Key Stage 3 and 14–19 feasible?
- What models of formal online learning at Key Stage 3 and 14–19 currently exist?
- What models of formal online learning exist outside Key Stage 3 and 14–19 that are transferable into these phases?
- Are current examples of the provision of formal online learning scalable?
- What evidence exists of the effectiveness or ineffectiveness of formal online learning outside the institution, with respect to personalised learning, improved attainment or motivation, or for particular categories of learners?
- What are the issues associated with remote, formal online learning for the institution, teachers, learners, parents and employers?
- Does engaging with informal online learning have an impact on the learner’s willingness to engage in formal learning, either at the same time or later in life?

A wide range of stakeholders from secondary schools and further education colleges were involved with the aim of investigating the range of models of formal online learning in use.

Eight case studies to represent a range of approaches were selected, the selection informed by interviews with key informants from commercial organisations, educational institutions and policy arenas, and the knowledge-mapping exercise. One case, Kirklees Collegiates, offered an insight into a cross-institution collaboration. The case studies are:

- The Bridge Academy (TBA) – a pupil referral unit
- The City Technology College Kingshurst (CTCK) – an independent secondary school
- Kirklees Collegiates (KC) – a partnership of Kirklees Local Authority, the Learning and Skills Council, and Calderdale and Kirklees Careers, together with local schools, colleges and work-based learning providers
- Monkseaton Community High School (MHS) – a state secondary school
- Leicester College (LC) – a further education college
- The Sheffield College (TSC) – a further education college
- St Helens College (SHC) – a further education college
- Villiers High School (VHS) – a state secondary school.

The case studies are presented in full in a separate report, *MILO: Models of innovative learning online at Key Stage 3 and 14–19 Final report appendices*.

Rationale for implementing online learning

The eight case studies reflect a wide range of models of online learning, each of which has been developed for specific reasons, largely in relation to visions of how technology can transform learning, but also to solve practical problems.

Transforming learning

Engaging learners

Online learning offers a means to support personalised learning, in that learners choose when and where to engage with learning; this reason to introduce online learning was offered by management for all instances in this research to varying degrees.

Two institutions offered additional reasons relating to engaging learners:

- At Monkseaton Community High School, the rationale is partly embedded within the school's vision of a greater emphasis on independent learning and a more flexible school day.
- At the Bridge Academy, the approach to online learning (described below) was developed with a primary aim of re-engaging disengaged students. Initially, the Bridge Academy adopted Notschool.net but found that this

approach (learner-centred, almost entirely online) did not suit all students. Bridge Academy staff believed that their students required more structure and needed more face-to-face contact; they developed an approach to address these issues.

Enhancing learning

Four institutions introduced online learning in order to enhance learning and the student experience:

- Monkseaton Community High School gave students access to Open University degree modules to enhance students' CVs and give them a competitive edge in the university application procedure, as well as to prepare these students for the university experience.
- Leicester College introduced PDAs to students taking Foundation Degrees in educational studies to enable students to capture their reflections and evidence in the field (their places of work) and also to facilitate greater opportunities for part-time students to work collaboratively with their peers and communicate with their tutors.
- The Sheffield College thought that the only way to provide a course on teaching online was through an entirely online model, providing students with first-hand experiences and modelling good practice.
- St Helens College introduced a learning platform in 2000 with the aim of enhancing the overall student experience, with the intention of positively affecting students' achievement and success.

Practical solutions

In five of the eight instances, the motivation for implementing online learning included a need to provide practical solutions to problems. Problems included:

- staff recruitment issues
- lack of physical space to accommodate growing numbers of students
- overcoming geographical barriers
- the burden of paperwork.

Villiers High School originally piloted the online model as part of a project initiated by the Innovation Trust. However, the school developed the project further because of the chronic shortage of staff in some subject areas in science, which is particularly noticeable in London.

At Monkseaton Community High School and the City Technology College Kingshurst, one reason for introducing remote online learning was because of limited space in school buildings and growing school numbers. At both institutions, remote

online learning is seen as a means to manage the situation at least until the Building Schools for the Future initiative leads to improved facilities (although new models of learning may underpin re-visioned schools). However, in both schools, remote learning is still in the early stages of development.

At Kirklees Collegiates and The Sheffield College, remote online learning is a means to widen access for students who are not necessarily geographically close to the institution. At The Sheffield College in particular, students do not attend the college and can be located anywhere in the world. In addition, at Kirklees Collegiates, online learning (irrespective of location) was introduced in science due to practical difficulties of arranging for students to see actual science demonstrations.

Another reason for choosing online learning relates to the ease of managing resources online compared with paper materials. At Kirklees Collegiates, the extensive and wide-ranging syllabus of some courses means that conventional textbooks would not do justice to the curriculum. Further, it is much easier to revise material that is online rather than in traditional textbooks. This has clear implications for the development of courses in the near future, such as the Diplomas being introduced as part of the 14–19 agenda. Monkseaton Community High School now offers an online BTEC in sports because the course is heavily assignment-based and there were issues relating to managing the associated paperwork (both for students and teachers).

What models of formal online learning at Key Stage 3 and 14–19 currently exist?

The knowledge-mapping document describes in detail the MILO framework for analysing models of formal online learning. A summary follows.

The MILO framework aims to provide a holistic overview of the use of formal online learning in specific cases, focusing on the pedagogic approach, organisational aspects and the way in which online learning is implemented technologically.

At the heart of the framework is the pedagogic approach that underpins the way in which each of these components is provided and implemented. The pedagogic approach considers:

- Is the pedagogic approach learner-centred or teacher-centred (constructivist or behaviourist)?
- Is the learning guided or autonomous?
- Is the learning individual or collaborative?

The organisational aspects of the framework consider these questions:

- How (if at all) is the students' study time organised?

- Where are the students located? Are the online materials used in a distance or face-to-face context, or both?
- Is the group cohortised or non-cohortised?

In terms of the technology used, this framework focuses on eight aspects in four areas:

- Learner tools:
 - content
 - activities
- Communication:
 - teacher–learner communication
 - learner–learner communication
- Assessment:
 - formative assessment
 - summative assessment
- Teacher tools:
 - pedagogic tools
 - administrative tools.

Each of these eight elements can be provided offline, online or through a combination of the two.

The circular bar diagram (see Figure 1) gives a visual summary of these eight technological aspects. Each segment represents one of the four areas, with the number of bars coloured in (from 0 in the centre of the circle to 10 at the perimeter) representing the approximate percentage of that activity undertaken online.

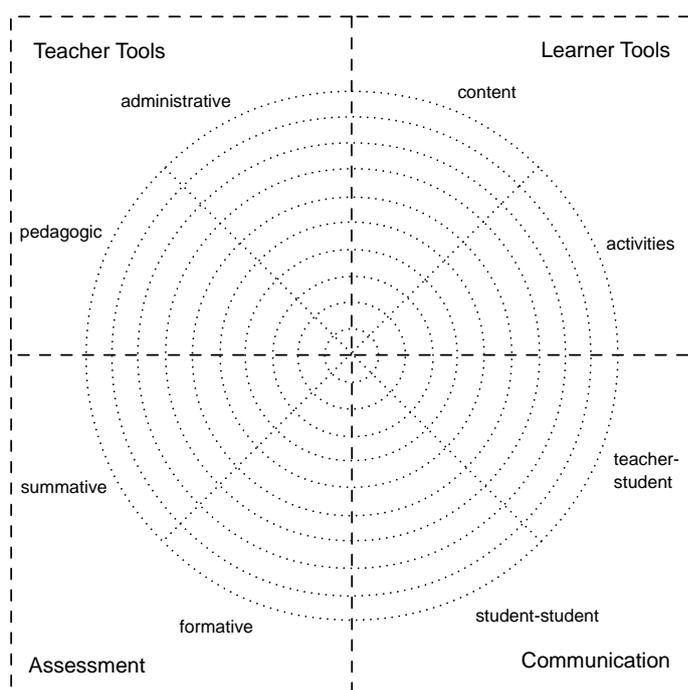


Figure 1: MILO framework diagram

This section provides a summary of each of the eight case studies in this research, mapping an example course from each to the framework developed, and considering its relationship to the typical models identified in the knowledge-mapping exercise. The typical models of formal online learning are as follows:

- Fully online – supported with structured activities and communication
- Independent study – with extensive online resources and some teacher support
- Added value – predominantly face to face with additional supporting activities and online resources to be explored
- Flexible integration – flexible timetabling to allow mix of online learning with traditional teaching and learning.

Examples of the typical models are presented in *Models of innovative learning online at Key Stage 3 and 14–19: Knowledge mapping*, an independent report produced as part of this research. In addition, the case studies below exemplify the four models, although in practice they resemble particular models rather than replicate them exactly.

In the sections that follow, each of the case studies is presented and analysed using the MILO framework.

Model 1: Fully online

The Sheffield College (TSC)

The Sheffield College is a further education college on three main campuses in Sheffield.

The Sheffield College is arguably one of the leaders in fully online learning and currently offers many courses, including GCSE English online which has achieved an almost 100 per cent achievement rate since it started in 2001. Due to staff workloads, we were unable to study the GCSE English online course but instead had the opportunity to focus on another well-established and successful online course: Learning to Teach Online (LeTTOL).

LeTTOL has been running at The Sheffield College for 12 years. This course is run at a distance, with students never normally attending the college in person, and aims to teach lecturers, teachers and trainers how to teach online.

Since the LeTTOL course is about teaching online, one of the key aims is to give students practical experience of learning and teaching online. Students learn to be online tutors in three ways, by:

- reading the content
- completing the activities that allow them to reflect on the content and providing evidence that they have understood it and developed their skills
- seeing best practice of how a good online tutor operates.

For each intake of the course, separate courses are set up in the learning environment, and individual tutors are able, to some extent, to customise what they do. Some items are standard, and individual tutors can add different components to tailor the course to their own online teaching styles.

All content is provided online as word-processed documents and web links, which allows existing content to be re-used. Standard items – for example core content, frequently asked questions and a glossary – which individual tutors can supplement, are provided for each unit. External web links are a key feature of the course, and students are encouraged to contribute additional links. Owing to the fast-moving nature of the field, content is updated on an ongoing basis, so use of web links saves times and allows the course to be kept current.

Activities take place entirely online and consist mainly of discussions in an online forum and web research. Students are also expected to design and plan online courses and run their own online activities with the group. Half of the activities are collaborative, so students work together in learning sets throughout the four units; this is a key aspect of the course. Bridging activities between units focus on

reflecting on the activities that have been undertaken and planning for the following unit. These activities are a crucial way of integrating what the students have learnt in each unit with the other units on the course, and are seen by the course team as an important way of helping students manage their time.

Communication takes place entirely online through the use of email, asynchronous discussion boards and online chat. Collaboration is an integral part of the course, so students are expected to use a range of technologies and understand their potential for learning.

Assessment is also entirely online. Regular formative assessment activities take place throughout the course, and these are integrated in a reflective portfolio, which acts as the summative assessment.

'[On the LeTTOL course] while tutors structure learners' discussions in the forum on the open source learning platform, the content of discussions is very much contributed by participants. [...] The learner-centred design was wholly different to anything the learner had done before: "[before LeTTOL] I've always been fed information.'

Learner, The Sheffield College case study

Teacher tools are provided to tutors, again entirely online:

- A tutor web board has been available since the course started running. The web board provides a forum for tutors to ask questions and share their ideas, and provides an archive of previously asked questions.
- Tutors are also given a tutor expectation grid, which details every activity that students undertake, with a description of what that activity involves and what the student is expected to do to meet the assessment criteria.
- A tutor guide provides detailed administrative information, including checklists of what to do at what point during the course, guidelines and technical information on how to organise files and chats and set up web links, and a range of sample emails. (A detailed study guide, which contains a detailed timetable of activities and submission deadlines, is given electronically to students at the start of the course.)
- Tutors are given a tracking document in the form of a spreadsheet, which contains timetabling information, details for monitoring progress and attendance, photographs of students, details and wording of activities, and information about what the tutor should expect the learners to do.

Figure 2 maps the LeTTOL course to the MILO framework.

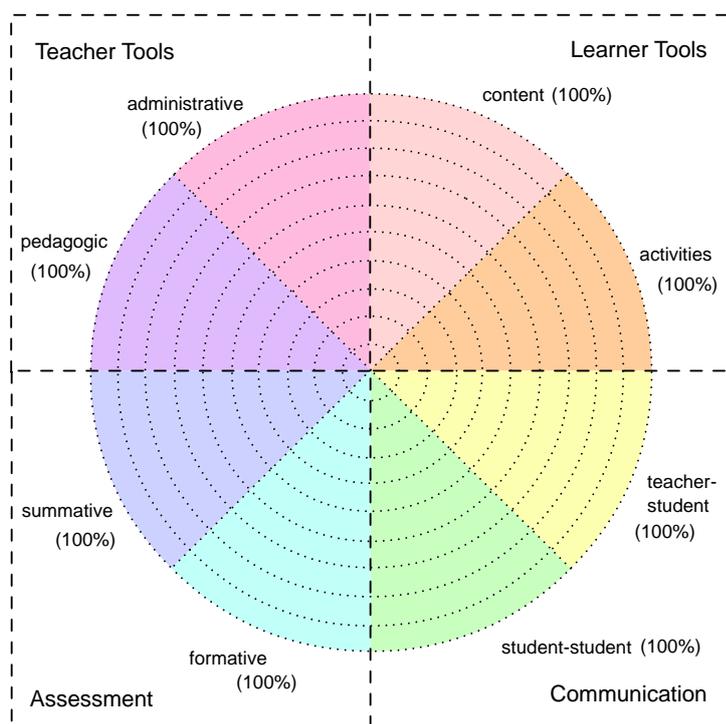


Figure 2: LeTTOL at The Sheffield College

Pedagogy:

- Learner-centred
- Guided autonomous learning
- Largely collaborative learning.

Organisation:

- Students organise their own time with tutor support
- Fully distance
- Cohortised.

Technology:

- All learner tools online
- All communication online
- All formative assessment online
- All administrative tools online.

The LeTTOL course maps exactly onto the typical fully online model, where students are expected to be largely autonomous but within a supportive and collaborative environment. Online communication tools are used extensively, and all formative and summative assessment is online.

Leicester College (LC)

Leicester College as it is now was formed in 2000 by the merger of two colleges in the city. It is one of the largest further education colleges in the UK, with over 27,500 students studying at four main sites in Leicester and over 90 outreach centres.

Since 2002, the college has used an open source learning platform. Early users of the learning platform were construction, engineering, hair and beauty, and computing departments; use tended to be where there was an enthusiast in the department. E-learning is now widespread across the college, for example Key Skills are provided online, full-time students take the National Literacy and Numeracy tests online, and study support teams use an online mind-mapping tool. There are pockets of excellent practice at Leicester College, but inevitably in some places there is still little or no use of e-learning.

On the learning platform, lecturers may take ownership of areas, so some courses follow a strict structure for handouts and activities, while others just use discussion forums. Much of the online content is uploaded paper-based materials, but interactive content is starting to be created, and staff are encouraged to use active learning design and support students in playing a part in creating the content.

The learning platform provides a space to store learning materials and files, facilities to create self-marking tests, a range of collaboration and communication tools, blogs and wikis, an online journal, and digital exchange of assignments. The range of administrative tools includes student tracking, personal workspaces and online evaluations.

The WOLF project is a collaborative research and development project between Leicester College and the University of Leicester that ran from March 2007 to December 2008, exploring work-based learners' use of PDAs to help develop portfolios.

The participants are teaching assistants in early years settings, on a Foundation Degree course in educational studies at the university. Students have one face-to-face class each week, carry out much study online, and use a PDA to record their experiences in their working environments by photograph, audio or video. Students use these records to help them reflect on and identify strategies to improve their practice. Students can access the learning platform from their PDAs and can synchronise their PDAs with their computers at home. Students use the photographs and footage as evidence in their portfolios, and can also in discussions in forums.

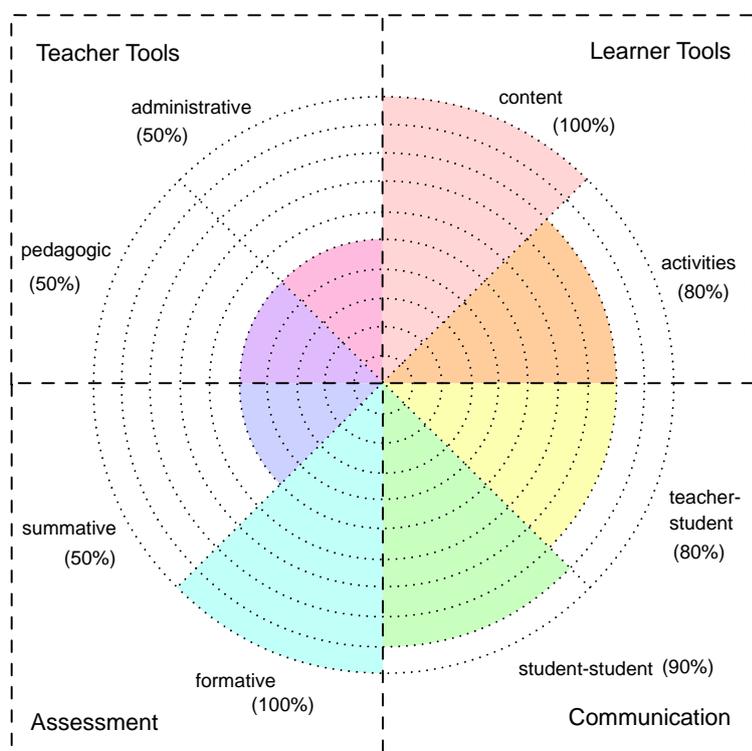
Resources on the college learning platform are organised in tables and sections with links. As well as learning materials, the site has administrative and organisational information such as the course timetable, details of course events, and notices. The course makes extensive use of discussion forums, and students use the college

learning platform journal feature to maintain their reflective diaries. Online communication between teachers and students is a major, essential element of the course, and online tutorials use forums and the learning platform chat module.

Students complete assessed activities from the start of the course. Students' postings to discussion forums enable the tutors to assess their progress; online activities and the students' reflective journals enable other formative assessment.

Figure 3 shows the WOLF project course modelled within the MILO framework.

Figure 3: WOLF project at Leicester College



Pedagogy:

- Learner-centred
- Guided autonomous learning
- Emphasis on collaborative learning.

Organisation:

- Students organise their own time in a workplace setting
- Predominantly online with some face to face
- Cohortised.

Technology:

- All content online; most activities online
- Most communication online
- All formative assessment online; some summative assessment online
- Some teacher tools online.

The WOLF project, despite having elements of face-to-face interaction, most closely matches the pedagogic and organisational design of the fully online course, in which learners are expected to have a high degree of autonomy and responsibility, tutor support is ongoing, and collaborative learning is encouraged throughout.

Model 2: Independent learning

Monkseaton Community High School (MHS)

Monkseaton Community High School in Whitley Bay, Tyneside, takes students aged 13–19. It became England's first trust school in 2007 and is supported by a charity formed from North Tyneside Council and two commercial partners.

The school has an interest in innovative approaches to learning which are grounded in research. Online learning at Monkseaton Community High School is a means to compensate for the physical constraints of the school building, but is also motivated by the school's aim for students to work independently for a set proportion of the school week on tasks set by their teachers.

The school uses a commercial learning platform. There is considerable variation in the degree to which different subjects use the learning platform.

The Young Applicants in Schools Scheme (YASS) enables academically gifted or highly motivated students in years 12 and 13 (sixth form) to study undergraduate Open University (OU) modules by supported distance learning alongside their AS and A levels. Over 40 modules are available, with a large portion delivered almost entirely online. The scheme aims to stretch and challenge students, providing personalised learning and encouraging independent learning. Students study in their own time at home or in non-contact hours at school.

The students taking part in YASS are self-selecting and, although a good academic track record is required, commitment and motivation are also essential. At present, approximately 10 per cent of the sixth form take part in the scheme. Tutoring is provided wholly by the OU, although pastoral mentoring is provided locally.

Students register with the OU and are provided with a username and password for the OU website. While there is some variety across the modules, learning content and activities are generally available online via the website. Even for courses which

have textbooks, the learning resources are duplicated online, although some courses have additional materials such as DVDs.

Generally, all teacher–student communication is online, but some courses (not all) offer telephone contact or face-to-face tutorials. There is some variation across the different modules, but in the case of language courses, for example, there is provision for live online tutorials.

The OU provides facilities for student-support networks online, as well as online tutors. Within Monkseaton Community High School, the students' home page has links to discussion forums where students can post questions for others to answer.

For some courses, assignments are submitted electronically, whereas other courses stipulate that assignments should be printed out and posted.

Figure 4 shows the Monkseaton Community High School/OU Exploring Science course modelled within the MILO framework. (Because the course is run through the OU, the teachers at Monkseaton Community High School were unable to provide information on the teacher tools used.)

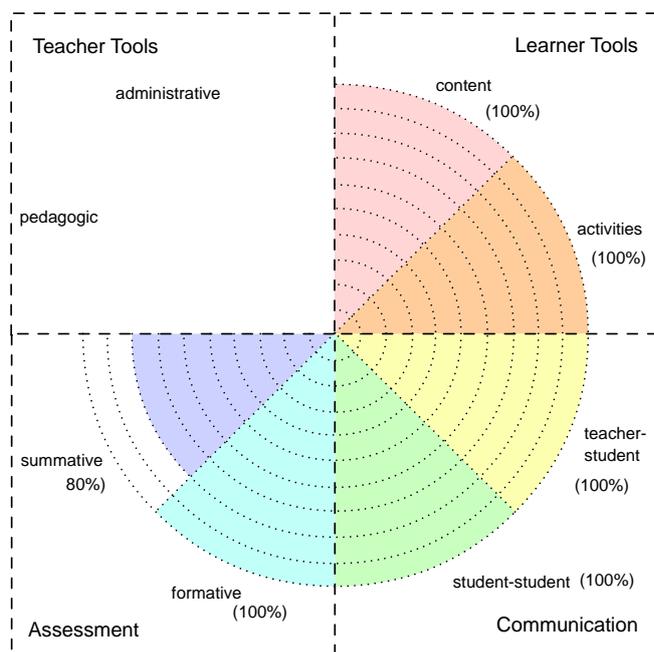


Figure 4: Exploring Science course at Monkseaton Community High School (no data available for teacher tools)

Pedagogy:

- Learner-centred
- Autonomous learning
- Independent learning online; optional peer interaction.

Organisation:

- Online learning is used in class; students undertaken additional work online
- All distance
- Cohortised, but peer interaction online limited and optional

Technology:

- All learner tools online
- All communication online
- Most assessment online
- No data on teacher tools (facilitated externally at the OU).

YASS at Monkseaton Community High School provides an example of the independent learner model, in which students work autonomously at a distance from their tutors. Summative assessment consists of a handwritten document so cannot take place online.

Model 3: Added value

St Helens College (SHC)

St Helens College is one of the largest further education colleges in the UK, with 16,000 students studying at three main sites in the St Helens area.

The college was an early adopter of learning technology and in 1999 established a centre for ICT developments and created a bespoke virtual campus to facilitate the online delivery of interactive learning materials developed in house. The learning platform is now well established and is widely used, although an alternative open source learning platform is being phased in.

The learning platform is being used to support and enhance the learning experience for students who already attend the college, but in most cases not for supporting remote learning. The learning platform is used in class under supervision by the tutor and is available outside class for independent study. Students have access to a range of online materials to support their learning. Curriculum areas can set up their own learning platform structures. On many courses, materials are largely static resources, often electronic copies of paper documents.

Students attend college on a regular basis, so are in regular face-to-face contact with other students and their tutors, which reduces the frequency of online contact related to the course. There is some use of email within the learning platform to facilitate group work.

The learning platform facilitates formative assessment by enabling tutors to create tests that are self-marking and provide feedback to the students, but this facility is not being used on all courses. The learning platform also offers teacher tools such as a digital drop box, tracking facilities, a notice board and personal storage areas.

The Animal Management Diploma consists of a number of units and is studied in college three days a week. All course documents and materials are on the learning platform, and tutors have uploaded their slides to the learning platform for revision and consolidation or for home study. Students complete many practical activities, but only a small percentage of these are online.

Assignments are online and are submitted via the digital drop box. Tutors enter the grades into the learning platform, so students are able to view their grades and identify what they need to do. The curriculum manager can also see how students are progressing, check attendance and monitor performance.

Figure 5 shows the Animal Management Diploma mapped to the MILO framework.

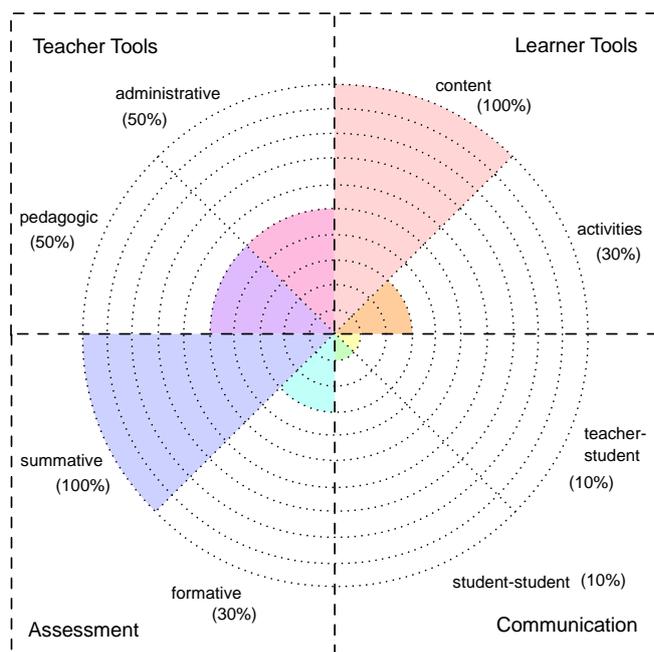


Figure 5: Animal Management Diploma at St Helens College

Pedagogy:

- Teacher-centred
- Guided learning
- Individual and collaborative learning.

Organisation:

- Students attend classes three days a week
- Predominantly face to face
- Cohortised.

Technology:

- Most content online; some activities online
- Minimal communication online
- All summative assessment online
- Some teacher tools online.

The Animal Management Diploma at St Helens College provides an example of the added value model of formal online learning, in which the interaction that takes place is predominantly face to face, but additional resources and activities are available online. In this example at St Helens College, owing to the large amount of face-to-

face contact, very little online communication takes place. It is unusual to see a course of this type with all summative assessment online.

Model 4: Flexible integration

The Bridge Academy (TBA)

The Bridge Academy in the London borough of Hammersmith and Fulham caters for young people aged 11–16 who have been excluded from school or are long-term school-refusers.

Around 25 per cent of students use Notschool.net and do not physically attend the campus; the remainder work at home on Mondays using Bridge Academy Online and attend the Bridge Academy from Tuesday to Friday. Students are required to log in to Bridge Academy Online every day. On Mondays, students undertake all activities online. Bridge Academy Online provides a structure for learning in a school environment on the remaining four days of the week.

The ultimate aim is for all subjects to provide access to the learning platform in all lessons during the rest of the week, via laptops, and for teachers to adopt a blended approach in lessons. Currently, content is provided on the learning platform for all subjects, but the extent to which this is done varies between subjects.

Students are required to take complete responsibility for their learning on Mondays, finding the tasks that staff have set them in each subject and completing those tasks using the resources provided. Activities are designed to be carried out by students independently, and if they do not complete their tasks on Monday, they can continue to work on them during the rest of the week, at any time that suits them. There is an emphasis on giving students clear goals, with each level of achievement clearly explained and specific instructions given about what the student must do to achieve the next level.

Figure 6 shows the ICT GCSE course at the Bridge Academy modelled within the MILO framework.

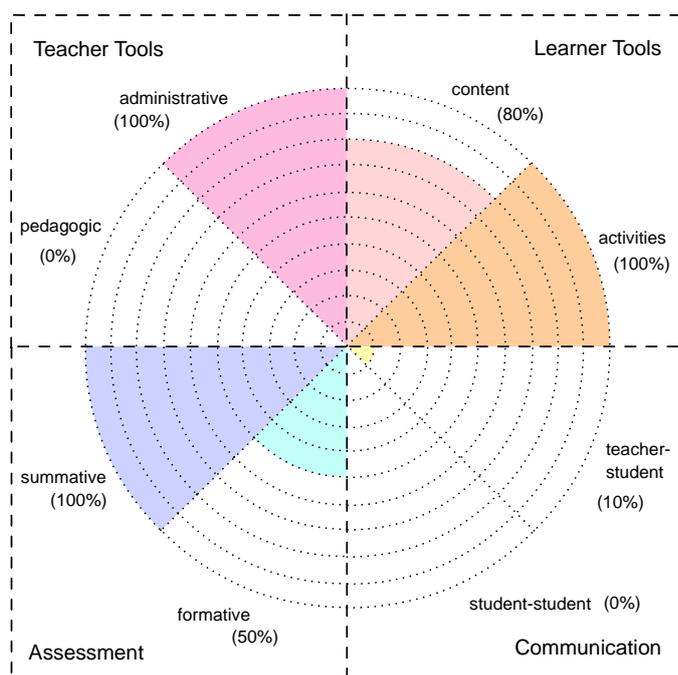


Figure 6: ICT GCSE course at the Bridge Academy

Pedagogy:

- Teacher-centred with clear goals and levels of achievement
- Guided autonomous learning
- Independent learning online; small groups face to face.

Organisation:

- Students organise their own time one day a week
- Fully distance one day a week
- Cohortised, but no peer interaction online.

Technology:

- Most learner tools online
- Minimal communication online
- All summative assessment online; some formative assessment online
- All administrative tools online; no pedagogic tools online.

The learning platform includes online communication tools, but interaction with other students and the teacher happens almost always in school. Students can contact their teachers to ask for help by email, but in practice do so only very rarely.

Students upload work to the learning platform, and teachers provide formative assessment by sending students comments by email. As a result, online communication to date has been largely asynchronous.

There are no pedagogic tools built in to the learning platform, but Bridge Academy Online records all the sites that students access from the internet, and students' work is stored on the learning platform so that staff can easily access it and find out which tasks the students have completed and which ones are outstanding. In addition to its use for curriculum and assessment, ICT is used to monitor students' behaviour using a management information system (MIS).

The Bridge Academy provides an example of the flexible integration model of formal online learning: students are given the responsibility to study from home one day a week, and the work carried out at home is integrated with the work carried out on other days. However, the flexible integration model differs from the typical model in that there is limited communication online and all formative assessment takes place online, which is unusual.

City Technology College Kingshurst (CTCK)

The City Technology College in Kingshurst is an independent school for students aged 11–19 in Birmingham.

The school uses a learning platform hosted externally, on which students and teachers have their own spaces online, and teachers can build up their own content by uploading pages.

There is considerable variation in the extent to which the learning platform is used across the institution; the strongest presence in terms of online content is in science. The school also has a growing online resource of video material: science, geography and English video resources are available on demand for teachers to use via electronic whiteboards in classrooms.

During the early 1990s, the science department worked in partnership with the school's commercial arm – a multimedia development company called 3E – to produce interactive learning materials aimed at Key Stage 4, covering all the topics in the new National Curriculum. This resource is called ClickScience and is made commercially available to schools.

For science, all content and learning activities are available online; however, content is also available offline and used in different ways with different ability groups. It is in the nature of science, though, that a certain proportion of work must be done practically and learning cannot be achieved just by reading. Thus, while some activities may be set online, they must be carried out offline.

For a week in summer 2006, 26 students in Year 10 took part in a pilot study covering one science unit. The students worked from home every day that week, except Wednesday when they came in to do practical experiments, working through activities on ClickScience. Support was provided by a teacher, available to answer questions and deal with problems live via email, and on Tuesday there was a 30-minute live streaming video of one tutor performing an experiment.

Teacher–student communication was online on the four days that students worked from home and entirely face to face during the practical on the Wednesday. No student–student communication was formally designed into the course, but students communicated with each other via email or telephone.

During the week of the pilot study, students were given responsibility to manage their own time and told to submit their work electronically by a 9:00pm deadline. The students were given advice about how they might organise their timetables, but otherwise were left to organise their time as they chose.

Formative assessment, by marking science assignments, was entirely online, with homework set, submitted and returned via email. Summative assessments, in the form of end-of-course examinations, still needed to be submitted on paper.

Figure 7 shows the one-week ClickScience course at the City Technology College Kingshurst modelled within the MILO framework.

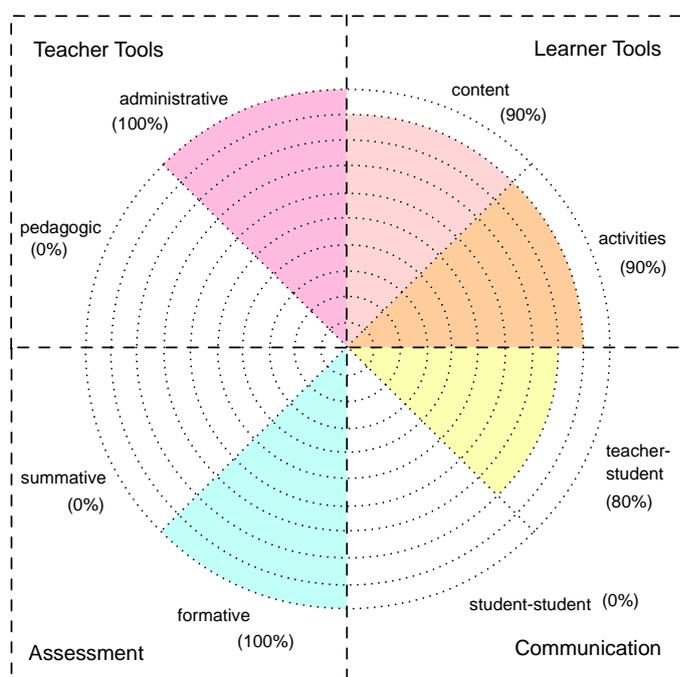


Figure 7: ClickScience week at the City Technology College Kingshurst

Pedagogy:

- Teacher-centred
- Guided autonomous learning
- Independent learning online; practical group work face to face.

Organisation:

- Students organise their own time for four days of one week with daily deadlines
- Fully distance for four days
- Cohortised, but no peer interaction online.

Technology:

- Most learner tools online
- Most teacher–student communication online; no student–student communication online
- All formative assessment online
- All administrative tools online.

The ClickScience week at the City Technology College Kingshurst provides an example of the flexible integration model of formal online learning – students are given the responsibility to study from home for four days, but in a highly structured and monitored way. This example is very close to the ‘typical’ model.

Kirklees Collegiates (KC): Spen Valley Sports College

Kirklees Collegiates is a partnership of Kirklees Local Authority, the Learning and Skills Council, and Calderdale and Kirklees Careers, together with 25 local schools, five colleges and 10 work-based learning providers. The aim of Kirklees Collegiates is to enable students aged 14–19 to go to other schools to take courses not offered by their own institutions; Kirklees Collegiates offers online learning across Kirklees.

Students travel once a week to the alternative provider and are set homework online. In addition, for one lesson a week, students work online at their main institutions and are supported online by the teacher at the institution hosting the course.

Spen Valley Sports College in Dewsbury, West Yorkshire, caters for students between the ages of 11 and 16. The school has recently adopted a comprehensive online revision and exam practice service covering over 60 courses for SATs, GCSEs and A-levels, providing instant automated feedback on each student’s performance.

Spen Valley Sports College uses online learning to offer GCSE dance; lessons are a mix of practical and theory. Classes involve students from two other schools who engage in three hours' learning a week over two years. Students spend two hours on Thursday at Spen Valley Sports College then have a one-hour online lesson at their own sites. Two classes on different sites take place simultaneously with the aid of a supply teacher.

Practically all content is online, and students are expected to study around a quarter of activities online; the rest is face-to-face practical. Work is set on the learning platform, which students access online. Students complete and submit work online: a template is available on the learning platform for assignments, which are word processed and then emailed back through the learning platform. Work is marked and returned online. Feedback on assignments is generally face to face. Revision is done at home. Extra tasks for learning are in the form of online games such as word searches or quizzes.

Online communication between the teacher and students generally consists of a couple of emails a week, but when classes run simultaneously, students use synchronous chat to ask each other questions.

No pedagogic tools are used, but there is a system for monitoring online work so that individual teachers are responsible for ensuring that students complete work in their subjects.

Figure 8 shows the Dance GCSE course modelled within the MILO framework.

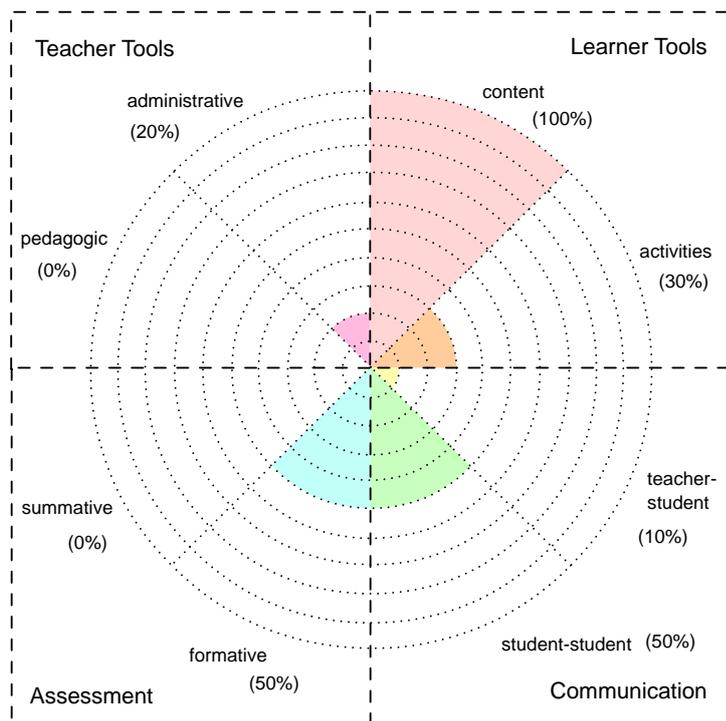


Figure 8: Dance GCSE at Spen Valley Sports College

Pedagogy:

- Teacher-centred
- Guided learning
- Predominantly traditional classroom interaction, some face to face, some distance.

Organisation:

- Timetabled sessions, some managed at a distance
- Face to face and distance
- Cohortised.

Technology:

- Most content online; some activities online
- Minimal teacher–student communication online; some student–student communication online
- Some formative assessment online
- Limited administrative tools online.

Spen Valley Sports College provides an example of the flexible integration model, in which teaching is a mix of face to face and distance, but is predominantly

synchronous – online learning is used to facilitate a virtual classroom. Teacher–student communication and the provision of formative feedback takes place largely offline in this example because of the large amount of face-to-face interaction built in to the course.

Villiers High School (VHS)

Villiers High School is near the centre of Southall in the London borough of Ealing.

Since September 2007, Villiers High School has provided online learning through a virtual school – a learning platform. The virtual school is currently only for science, and used only with the top sets in Years 7, 8 and 9, but the intention is to develop it for English and mathematics and extend its use to Key Stage 4.

The virtual school aims to support personalisation of learning, enabling students to progress at their own rates through subjects of their choice. The virtual school also helps to overcome the chronic problem for London schools of a shortage of specialist teachers for science, English and mathematics.

The virtual school has three elements:

- online learning materials to be studied by students in their own time
- tutorials to be used with a teacher during lesson time
- four-hour interactive practical sessions delivered by an external team.

Approximately three-quarters of the activities are carried out online. Online activities are varied and include games, quizzes, crosswords and drag-and-drop exercises.

Some student–teacher interaction is online. Students have weekly, half-hour tutorials with their teachers, are supervised in class time by either the librarian or a teaching assistant, and are mentored online. A substantial amount of student–student communication is online.

Much formative assessment is online in the form of quizzes and crosswords. In addition, the small face-to-face groups enable teachers to carry out formative assessment and clear up any misconceptions that students have. Summative assessment is available online for every topic.

Figure 9 shows the Villiers High School Virtual School model within the MILO framework.

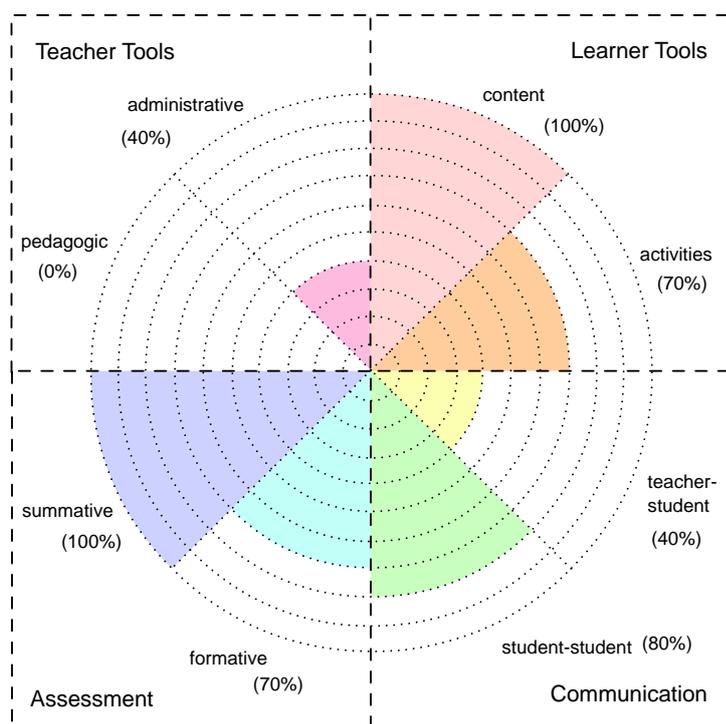


Figure 9: Villiers High School's virtual school

Pedagogy:

- Teacher-centred
- Guided autonomous learning
- Individual and collaborative learning.

Organisation:

- Teachers organise students' time
- Face to face
- Cohortised.

Technology:

- All content and most activities online
- Some communication online
- Most formative and all summative assessment online
- Some administrative tools online; no pedagogic tools online.

The Villiers High School virtual school model is an example of flexible integration, in which online learning is the primary mode of delivery, with the practical elements of the science course delivered in more traditional formats during extended periods of half days rather than regular one-hour lessons. The Villiers High School virtual

school model differs from the typical model in that the online learning is facilitated on site and, to address issues of self-motivation and self-management, students are overseen by para-professional staff whose role is to ensure that the technology works and that students remain on task.

Is provision of formal online learning at Key Stage 3 and 14–19 feasible?

It is clear from the examples described in the previous section that different models of formal online learning are feasible at Key Stage 3 and 14–19. However, the degree to which certain models are appropriate depends to a large extent on the age and maturity of the students and the degree of autonomy they exhibit.

The value added and flexible integration models are still essentially teacher-led models in which students are allowed, to varying degrees, to take responsibility for managing their time and workloads. Students take on a far greater degree of responsibility and autonomy in the fully online and independent learning models. It is likely, therefore, that these latter two models are more appropriate for older learners who have more experience of learning online and working independently, and do not need additional support to keep on task.

All the instances of formal online learning examined varied to a greater or lesser degree from the 'typical' models developed. It is apparent that there is, in reality, no such thing as a typical model. Various factors such as student demographics, location, staff skills, and parental expectations influence the most appropriate way to introduce formal online learning in a given situation. The typical models are useful for considering the underlying pedagogic, organisational and technological approach behind an implementation, but should not be thought of as 'ideal' or 'prescriptive' models. Flexibility and creativity in the design of formal online learning in a particular context is essential, and it is important that there is scope for innovation and risk-taking within this emerging field.

Given the requirement for flexibility and creativity, it is likely that the flexible integration model, which can support many permutations and different adaptations, will be most appropriate for school settings. The flexible integration model also allows students at different stages to be given increasing levels of responsibility, and supports the development of autonomy throughout a student's school career. However, the implementation of the flexible integration model requires a strategic re-think of the ways in which learning, teaching and assessment are managed within the institution. Barriers such as logistics, parental and staff attitudes towards online learning, staff skills and time available, assessment systems, and the cost of development and ongoing maintenance need to be considered and overcome before the flexible integration model can be implemented effectively.

Are current examples of provision of formal online learning scalable?

Technical issues: access and infrastructure

Models that rely on access to technology on site (including for assessment purposes) are currently constrained by lack of resources. If there is a full-scale shift from paper-based summative assessment to online summative assessment, pressure on access to resources will increase. Large-scale national testing of students would require testing areas equipped with PCs. Testing areas would increase pressure on space and also require the finance to acquire, support and replace the equipment.

Providing large numbers of students with state-of-the-art digital equipment for home use may prove too expensive to scale up. However, in the Bridge Academy model, equipment for students is an additional and separate part of the model and should not be viewed as a potential barrier. At the Bridge Academy, the equipment is provided (as with the Notschool.net initiative) as one of the means to engage students – the equipment signals ownership, responsibility, and respect from adults, and in relation to Notschool.net it signals that what is happening is not like school. In addition, computers should offer any time, unlimited access rather than shared access. Disengaged students have particular needs. This approach could be scaled to support mainstream students, without the need to provide equipment (except to students who do not have access). An alternative approach is to require all students to provide their own portable computing devices.

A learning platform is seen to be robust and easily scalable, subject to storage requirements. Currently, additional storage is not thought to be costly. Increased access within an institution places greater demands on the infrastructure; this may be exacerbated by increasing use of Web 2.0 technologies (eg accessing digital video).

Staffing issues: training, support and management

Increasing use of learning platforms increases training requirements.

To extend the materials available on learning platforms, teachers must spend more time creating or adapting materials. As the use of online materials becomes more widespread, higher standards may be expected and desired, which has implications for staff time and cost. Teachers and lecturers may not have the level of skill required to create high quality materials.

Involving all teachers from the outset (ie in an institution-wide initiative), with ongoing provision for staff training, and ensuring that staff give the project priority, is seen as a success factor (TBA). However, this approach could be challenging in larger

schools (the Bridge Academy is a small pupil referral unit). Alternative support mechanisms such as content creation teams (LC) offer another solution.

‘He sees the secret of success as being that Bridge Academy Online is a school-wide initiative, built into a school cycle of continuing professional development: “It’s easier when you say the whole school is doing it, because there isn’t anywhere where people can hide.”’

Assistant headteacher, Bridge Academy case study

‘ILT managers reported that the introduction of a support and development team to manage the learning platform was important in the success of the college’s e-learning provision. The support and development department did not exist when the current learning platform was introduced, and in the early days it had an inconsistent structure owing to the lack of central co-ordination. Now virtually all course creation is handled by this team, although a few tutors have been granted course creator status.’

Leicester College case study

Links with universities or commercial developers are costly and may be difficult to arrange. At the City Technology College Kingshurst, resources are developed by a separate team of specialists (although some are also teachers at the school); commercial multimedia teams attached to schools and colleges are not necessarily commonplace. The model at the City Technology College may not be replicable at other schools unless similar support structures are put in place, inevitably at a cost. Alternatively, schools can purchase off-the-shelf resources, but with the disadvantage that staff may feel a lack of ownership and may not find that the material exactly meets their needs.

In principle, a collaboration model (as in Kirklees Collegiates) can be scaled up without problems. There would be a greater management and administration workload co-ordinating the various institutions, courses and learning platforms.

‘The KC4L [Kirklees Collegiates] model involves collaboration between nearly 30 schools and colleges, as well as employers, across a whole local authority. The model has been running for some years and is perceived by e-learning managers to work well. There does not seem to be any problem with respect to how many students can log in at the same time. The selected learning platform is used by 50 local authorities and private sector organisations, and all schools that use it can share resources.’

Kirklees Collegiates case study

The Young Applicants in Schools Scheme (YASS) at Monkseaton Community High School – Open University (OU) modules studied at a distance – is scalable in relation to the provision of the courses by the OU (which currently supports approximately 20,000 students). The OU is gradually moving all its learning materials onto the learning platform and increasing the role of online assessment. However, within the school setting, pastoral support is needed for students, and, as numbers of students increase, more staff may need to undertake this role. Furthermore, OU courses are suitable only for learners who are academically able, committed and motivated. Thus, while being scalable, this initiative does not meet the needs of all types of learners, and therefore is not fully inclusive.

Fully online courses require online tutors. Scaling the course to greater numbers of students would require more tutors. Students would need to be set up as users on the learning platform, which would increase the administration load.

The model at Villiers High School is replicable across the country with appropriate support structures and involvement with external agencies (centrally managed resources; external agency co-ordinating involvement of undergraduate students).

In what ways has the introduction of online learning had an impact on organisational issues?

Timetabling

Changes to the school day or week require reorganisation of the timetable, which could have a major effect on the operation of the year group or the whole school.

Supporting remote online learning requires flexibility (CTCK). One potential solution (planned at the City Technology College Kingshurst for 2008–09) is to stagger start times, with some year groups working at home in the morning and coming on site in the afternoon, and others on site in the morning and off site in the afternoon. A greater emphasis on online learning – particularly that undertaken remotely when, traditionally, students remained on site – will require radical changes. At the City Technology College Kingshurst, institutions need to collaborate carefully to timetable and administer courses.

At Villiers High School, the need to timetable four-hour practical lessons for 60 students causes problems. (The practicals use two labs for the whole day, preventing access for other classes.) In addition, there is a demand on lab technicians to set up the apparatus. Students inevitably miss some lessons, although the extended practical sessions are timetabled when students normally have double science to minimise this.

At the Bridge Academy, an advantage of all students being off site one day a week is that teachers have an extended period in which to produce resources. However, staff

feel that they need to do more work in the evenings because their planning, preparation and assessment time is effectively dedicated to resource development.

To support a more flexible approach, staff may need to be available beyond the school day, at agreed times. Students at Villiers High School noted that their online queries were not always answered immediately (even though they were working online during timetabled periods). Timetabling to ensure that someone is available to tutor the class remotely would constrain the opportunities for staff to withdraw small groups of students.

Working practices

Pedagogy

Staff may need to change their pedagogical practices (depending on the model of online learning), becoming more facilitators than experts, as students become more autonomous.

In some organisations, technology is changing the way that assessments are conducted. Some students submit their work via the learning platform and receive feedback by the same method.

Teachers need time to develop new approaches, as noted in previous research (eg ICT Test Bed – Somekh *et al.* 2007¹). Staff may need to rethink how they present resources to make the most of the media used (and also have opportunities to discover the affordances of the media to harness the potential fully). At Kirklees Collegiates, online learning facilitated a switch from regular homework to extended learning tasks online. At Villiers High School, staff commented that they need to adapt to teaching in small groups, and that some staff need support to do this effectively.

Staff issues

At Kirklees Collegiates, the need to work collaboratively across institutions has required management from a single organisation with the capability for overall organisation and responsibility. The best-placed organisation to meet this need is the local authority; it is responsible for managing the learning platform and liaising between institutions, and can influence technical policies on internet blocks and filters.

Opportunities must be created for staff to undertake training and develop resources, to ensure that online learning is fully developed. At the Bridge Academy, the regular

¹ Somekh, B., Underwood, J., Convery, A., *et al.* (2007) *Evaluation of the ICT Test Bed project*, Becta. [http://www.evaluation.icctestbed.org.uk/files/test_bed_evaluation_2006_learning.pdf]

one day a week during which students are off site is believed to be a success factor; however, occasional half days offer an alternative means of ensuring that staff buy-in to new practices, and could offer sufficient opportunities for personal development (CTCK).

A 'champion' to drive developments within the institution is valuable. However, it is suggested (KC) that the 'champion' is not from the ICT department, because this can send out the wrong signals.

If teachers do not have the skills to create sophisticated resources, external support may be required; this has implications for funding and requires careful management to ensure that needs are met fully.

Online learning places additional demands on teachers' time in relation to resource identification and development (LC, SHC, VHS). In addition, it is perceived that communicating with students online increases pressures to work from home (SHC). On the other hand, at The Sheffield College there has been an increase in teleworking and hot-desking, offering greater flexibility to staff.

Online learning is perceived to improve efficiency by reducing paperwork and improving assessment practices. In addition, online records obviate the need for physical storage space. At Villiers High School, external undergraduate students mark some of the students' work online, which takes some responsibility from staff while avoiding issues of remote storage and security.

One critical success factor at The Sheffield College is a forward-thinking approach to managing staff contact time – tutors on the LeTTOL course are given the same number of hours as tutors responsible for face-to-face classes. The LeTTOL tutors are paid at the same rate as other colleagues and do not have to account for their time.

At Villiers High School, where independent study sessions are supervised by the librarian and a teaching assistant, the relationship between these staff and students is perceived to have changed. Learners treat both the librarian and teaching assistant as teachers. However, the librarian sees her role as providing technical support only, whereas the teaching assistant feels confident enough (having worked in the science department for three years) to answer students' queries.

The model at Villiers High School was introduced partly to address staff shortages. In practice, while it offers some flexibility, the amount of flexibility is less than originally anticipated. Timetabling issues, arising from four-hour practical sessions for students, prevent access to science labs for other students and result in the students concerned missing other lessons. In addition, the teacher must not only be available for small-group tutorials but also manage and/or oversee the external

undergraduates. However, staff suggested that one teacher may be able to support a group of 60 students rather than 30.

From a different perspective, students at Villiers High School interact with more adults (people from external agencies, the librarian and the teaching assistant) on a regular basis. Supervision of behaviour and progress, for example, may involve the head of science, where previously this would not have been a regular occurrence. A higher degree of communication between individuals is required than would be required if students were managed by a single teacher.

Increased use of technology, and dependence on technology for learning in the school or college, increases the need for technical support and maintenance of the equipment. Providing support to students and parents outside the school or college increases this load further. Computer equipment needs to be replaced every three to four years, and this additional cost and technical workload must be built in to the budget.

Whether software is proprietary or open source, the learning platform brings associated maintenance and administration tasks; this is a new demand in many organisations. To meet the demand, a new member of staff may be needed or an existing staff member retrained, which is a further cost to the organisation. On the other hand, current enthusiastic staff members can receive formal recognition of their valuable contributions.

Other issues

At Kirklees Collegiates, there is a need for all participating institutions to adopt a common learning platform to make the sharing of resources easier and simplify access for the student.

The blended solution is popular in many of the case studies. These schools and colleges identified the need for more computers to support the increased availability of materials on the learning platform and other uses of the technology, and also identified issues of finding space to locate the computers. This puts pressure on school or college budgets.

Leadership and management

Strong leadership and vision are perceived to be important for success in relation to facilitating online learning (TBA, KC, VHS). A Strategic Leadership of ICT (SLICT) course was perceived by staff at Kirklees Collegiates to have fuelled heads' enthusiasm. At Villiers High School, external support from interested agencies was an additional factor for success. However, changing pedagogical practices and switching to online models of learning is perceived to be a difficult transition to manage (CTCK).

Students, teachers and support staff all need training and regular access to the technologies (TBA, CTCK). In addition, support from technical and administrative staff can help to reduce the burden on teaching staff.

In terms of approach, institutions generally adopted a bottom-up organic approach (eg MHS) within the framework of a clear strategic vision guided by strong leadership.

What evidence exists as to the effectiveness or ineffectiveness of formal online learning outside the classroom?

Personalised learning

Staff, students and some parents provided many reasons why remote online learning has the potential to support personalised learning and student autonomy, including that it offers:

- A flexible approach, with students working at times and in locations that suit them, reducing the need to travel and hence saving time (TBA, KC, MHS, TSC, SHC, VHS)
- The ability for students to progress at their own pace and complete activities and tasks more quickly if teachers support this (ie if teachers do not control the release of material) (LC, TSC, SHC, VHS, SHS)
- The option to revisit materials for consolidation (CTCK, LC, SHC, VHS)
- The ability for students to access materials when they are unable to participate in face-to-face sessions (KC, LC, SHC)
- The option to engage in extension activities (CTCK)
- A greater choice of subjects/courses (KC, MHS)
- The ability for students to be more responsible for their learning (TBA, MHS, LC, TSC), although this can take a longer time to develop with younger students (SHC)
- Access to online assessment data which indicates where students are and what they need to do to improve (LC, SHC)
- Widening access to all: students are not constrained by geographical access to the institution (TSC)
- More timely access to guidance and support from a teacher or tutor (SHC, TSC)
- Differentiated pathways which are easy to offer (VHS)
- The chance to facilitate student voice: staff perceive that online discussions facilitate student voice and, if discussions are facilitated rather than controlled, students have greater ownership of their learning (KC).

“Online learning provides the flexibility in terms of time and location that means I can fit studies better around my other commitments. There is no travelling or other wasted time involved, and I feel that the time I do spend on my studies is profitably used. This acts as a motivator for learning.”

‘Even though the tutor’s responses were not immediate, the online contact allowed the learner to feel supported over a sustained period, which was in contrast to a classroom-based course: “If you say you’re struggling with something, you get the support [on LeTTOL] – it’s not like only having one hour a week to see the tutor.”’

Learners, The Sheffield College case study

‘The interviewee said that this approach brought “huge benefits – for me it was great”. The advantage of the approach is that “you’re more responsible for your learning”. You have a “sense of ownership in the content that you learn – you value it more”.’

Learner, The Sheffield College learning narrative

‘The interviewee felt this was very useful as it enabled students to go back over the presentation, check understanding, and consolidate their learning: “In lessons sometimes they just skip a slide like a picture or something that’s only got a little bit of writing so we can go back and just have a look and see what it was. [...] You can read through them properly and get used to it in your head [...] You can keep going over and over it”.’

‘She [the learner] felt online learning enabled her to be more independent since she could work without her tutor: “you can just get in with it at home – you don’t have to wait for a teacher to see you”.’

Learner, St Helens College learning narrative

“Virtual school is like, I’m in charge. I can learn what I want to learn, I look at the page, I click what I want to learn – because [in the classroom the teacher says] ‘text book 1, page 56’, but [on the learning platform] there’s a list of lessons, and I can click which one I want to go to, and learn which one I learn... I’m the boss, I’m the man – I’m free!”

Year 7 student, Villiers High School learning narrative

Impact on motivation

Staff (TBA, MHS, LC, VHS) perceive that transferring responsibility for learning to students and facilitating new ways of learning had a positive impact on motivation. At the Bridge Academy, the assistant headteacher gave the example of one student

whose attendance had improved too, although he noted that it was still early days for the project.

‘Teachers report that students’ motivation is very high: “There aren’t any behaviour incidents during VS [virtual school] time. Concentration levels appear to be high. Everyone in the class is very focused.” Students have been observed to “run into the room”.’

Villiers High School case study

‘Her view of the week working at home was that: “for someone like me, who’s actually prepared to work, and actually saw the benefits of it, I enjoyed it. It gave me a chance to get it done, out of the way, and move on to the next thing.”’

Learner, City Technology College Kingshurst learning narrative

However, the positive impact does not apply equally to all students. One student at Villiers High School presented a different perspective on online learning, raising a number of concerns.

Kirklees Collegiates’ staff think that online learning is motivating for those students who are already interested. For some, the perceived lack of support, along with isolation, is demotivating. Blended learning is thought by staff to be the best approach for maintaining motivation (SHC).

In particular, working remotely is seen to be beneficial because distractions are less likely and students can focus for extended periods if they want to, which is seen to strengthen engagement (TBA). Even when students are working on site, online learning can positively affect engagement: at Villiers High School, staff noted that some students continue working beyond the end of the lesson, into break time. One parent (KC) reported that his son finds online learning engaging, and perceived that competitive exercises were particularly effective.

Impact on attainment and other learning outcomes

The results at Key Stage 3 for Kirklees Collegiates in science were lower than for English and mathematics four years ago, but are now much improved. This improvement is partly attributed to the fact that science has introduced the most online learning. Staff perceive a correlation between the amount of time online and attainment in science.

At Monkseaton Community High School, many students achieve qualifications for the BTEC Sports Science course, which is deemed equivalent to two A-levels by the QCA. It was noted that students with low academic records would not previously have achieved two A-levels. As a core subject, ICT has achieved better results than

either mathematics or English; GCSE passes at the school have improved from 15 per cent in 2005, before DiDA, to 73 per cent in 2008.

At The Sheffield College, 2,500 students have graduated from the LeTTOL course over the last 12 years. The leader of the course thinks this is a relatively high level of success, particularly for an online course. The Ofsted reports at St Helens College suggest an upwards trend in achievement and success levels, according to staff.

One student (LC) commented that he was not predicted to do well but achieved a credit for the course he was enrolled in; he attributed this success to the online learning environment.

For one learner at The Sheffield College, experiencing online learning while learning how to be an online tutor was beneficial, challenging the learner's notions of how an online course can be managed and delivered. Another learner at The Sheffield College noted that engaging in online discussions encouraged him to research the topic in order to make original contributions.

'A challenge highlighted by students was the difficulty of thinking of new contributions to post in the discussion forum. One student had five people in his learning set, with a single person responsible for starting off the discussion and summarising its content at the end. He found that the 'keenies' (as he termed them) would very quickly contribute all there was to say about a topic. He found it difficult if he did not get in quickly to add new contributions because "some people hog the forum". The student was concerned that often he looked as if he was just repeating what others had said, although others' contributions encouraged him to consult the provided references and read around the topic in order to formulate an original contribution; he was forced to "hunt around for some new stuff".'

The Sheffield College case study

One parent at Villiers High School noted that students develop better time-management skills and so are better prepared for higher education. Similarly, staff at Monkseaton Community High School noted that the YASS scheme develops independent study skills, and that students are likely to support each other.

Impact on learning materials and activities

Staff at the City Technology College Kingshurst think that the multi-modality of online learning could facilitate more effective learning. The staff commented that online learning is most effective when the affordances of the tools are fully exploited, for example when students can retrace their steps and review materials if they find subject matter difficult.

Students at St Helens College found the visual support offered by some online resources beneficial. Staff (CTCK, SHC) noted that some activities are easier to facilitate online (eg wiring a plug). At Villiers High School, staff noted that using external agencies to do practical sessions means that some activities can be undertaken that would not be possible otherwise (eg dissecting hearts).

One student (CTCK) perceived that remote viewing of lessons which are streamed live facilitates more objective analysis than live observation would permit. A member of staff at the City Technology College Kingshurst noted that live-streaming lessons to remote students is most effective when arranged after students have had an opportunity to raise questions and problems; the staff member suggested that it could be better in the future if peer learning groups were set up to facilitate this.

A common learning platform enables staff across institutions to share resources (KC). At The Sheffield College, a purpose-built tool to manage and share web links allows much existing material to be repackaged and re-used. Staff find it easy to review materials and adjust them, even during a lesson, because all resources are located in one place and can be edited easily (KC, TSC, SHC).

At St Helens College, students and staff perceived that tutors' guidance on websites ensured that time spent researching online was more effective.

A student at The Sheffield College noted that scenario-based problem-solving was useful and enjoyable.

Impact on assessment

Students like the instant feedback from automated assessment (KC). At Leicester College, students think that their assignments are returned more promptly than when the process is paper-based. Also, students appreciate that submitting work online offers a form of buffer (avoiding face-to-face challenges) (CTCK).

Staff perceive (MHS, LC) that electronic handling of assignments reduces the likelihood of losing students' work. One staff member (MHS) thinks that electronically submitted work is of lower quality. Staff (MHS, LC, SHC) also believe that both teachers and students can quickly access assessment data, which assists management and helps students to understand what is required; one advantage is that supporting students in individual tutorials becomes more effective.

Online learning is perceived by staff to be particularly effective for supporting formative assessment (CTCK). Staff at Leicester College said that formative assessment via discussion forums enables tutors to assess the strengths and weaknesses of students more quickly than before. Because online learning leaves a trail of activity (time spent, activities undertaken), teachers are more able to monitor and praise progress (KC, LC, SHC).

At Kirklees Collegiates, the switch to 'extended learning tasks' is reported to have reduced the requirement for teachers to assess within face-to-face lessons, releasing staff to spend more time offering one-to-one support in the classroom.

"What I like about [portfolios on the learning platform] is that it is very structured. I think I have more control over what they're doing, what they're learning, where the evidence is going, finding the evidence and tracking the evidence. A lot more control over what's going on than when it's a paper portfolio."

Tutor, St Helens College case study

Assessing online is easier for teachers and tutors for a number of reasons, articulated by one tutor: easier to check for plagiarism; comments are readable rather than illegible; it is useful to be able to make different kinds of comments in different colours; and the process is thought to be faster (tutors can mark work as it is submitted).

Impact on communication (online and face to face)

In terms of support from teachers and tutors, many students commented that online learning offered benefits over face-to-face support. Students (TSC) perceived that online learning enabled them to have more contact overall with their tutors, rather than being limited to a one-hour face-to-face tutorial. However, they noted that tutors (not unreasonably) were not always able to respond instantly. In addition, students working on site can be supported by adults remotely (VHS). Online delivery and independent remote study are perceived by staff (CTCK, SHC) to release teachers to spend more time supporting students, both face to face and virtually, to meet individual needs.

At Leicester College, online induction activities were perceived by staff to improve communication, resulting in staff being more aware of skills gaps and in a position to offer differentiated feedback.

'While all students have a tutorial every few weeks, he pointed out the facility for contacting the tutor from within the Learndirect website, effected by clicking on a button marked 'email tutor'. The student reported using this facility on one occasion only: "I just sent a quick message." He had been enrolled on the wrong level and chose to email his tutor simply because there was no scheduled class on that day in which he could meet his tutor face to face: "I don't have to get up and walk to another building, really.'"

Learner, St Helens College learning narrative

Students and teachers noted that discussion forums (KC, TSC) enable peers to learn from each other and discuss issues in depth. However, sometimes it can be frustrating waiting for individuals to respond.

‘The headteacher describes one of the major impacts of online learning as greater “student voice”. A good example of student voice is the student discussion forum (emphatically not a chat room, in the headteacher’s eyes). Some topics on the forum were initiated by the headteacher, but students have been sufficiently interested in using the facility to initiate discussions on subjects such as how to improve the new dining area further, whether the school should have a sixth form, and whether there should be a school uniform. What was impressive is that Year 7 students were able to join in and disagree with Year 11 students, with whom they would never normally interact. Students who are normally too shy to speak up in class can contribute articulately. The school moderates discussions on the forum, but allows students to talk and write informally.’

Kirklees Collegiates case study

Impact on other aspects of pedagogy

In relation to efficiency, staff and students noted that reducing the burden of paperwork, particularly in coursework-heavy subjects, was a great benefit of online learning (MHS, SHC, LC).

Staff (MHS) note that instant access to assessment data helps with other administrative tasks (such as authorising Education Maintenance Allowance applications).

Online learning is believed (MHS, LC) to speed up the teaching process (students can progress at their own pace) and requires less teaching input (students take greater responsibility for their learning). At Villiers High School, one teacher commented that there is a quick start to the lesson because students just log in and get on with it; there is no need to wait for instructions from a teacher.

The use of a learning platform means that the release of materials to students can be controlled (LC) and staff can more easily monitor students’ progress (LC).

“We’ve got packages that link to our lesson plans and schemes of work. The OCN units are linked to the tracking documents – it’s not just about them [students] dropping in to it [the learning platform], it’s about us tracking them.”

Tutor, Leicester College case study

At Kirklees Collegiates, online learning is believed to have had a positive impact on supporting the delivery of Diplomas across multiple institutions. Staff at Kirklees

Collegiates perceive that online learning reduces the travel requirements for students on collegiate courses.

Online learning is believed to make checking attendance easier (SHC).

At The Sheffield College, it was noted that it is easier to support equality, diversity and accessibility. For example, there is ready access to digital translation services. Online learning, and in particular that supported remotely, also offers flexibility to teaching staff, who do not necessarily need to travel to an institution and can work at times that suit them best (TSC).

“I teach them from here (Spenn Valley) via the internet for one hour in their own school... For this course, the internet is key, especially for the students at other schools... If they didn't have computers at home, it would have made it difficult.”

Teacher, Kirklees Collegiates case study

At Kirklees Collegiates, one member of staff noted that online learning makes teaching more engaging, and can make dull topics interesting. For example, staff are using a computer program in PE to record sporting movements and compare the angle of students' joints and limbs against an ideal model – “We're trying to make that bigger at the moment.”

Staff at Villiers High School said that they enjoy the opportunity to work with students in small groups. At Monkseaton Community High School, one staff member said that supporting personalised learning was more pleasant than “you against 30”. Staff (CTCK, MHS) perceive that online learning enables teachers without subject expertise to support students.

Impact on types of learner

The Bridge Academy model provides an example of the impact on students who have become disengaged with learning and been excluded from school. In this case, the provision of state-of-the-art equipment signals that the student is valued and respected. The model of online learning contributes to the success of the Bridge Academy experience. Staff report that students are highly motivated and many re-engage with learning. Some students complete work at home for the first time. Attendance has improved.

Online learning is perceived to be successful for learners who are motivated and of higher ability. For lower ability learners and those who are not self-motivated, greater structure is required, including a consistent approach to managing behaviour issues (particularly, not engaging with online learning remotely). Demotivated learners are perceived to respond well to bite-size amounts of material (KC). For learners who

lack the organisational skills to manage paper-based coursework, online management of such work is perceived to be beneficial (MHS).

Although not evidenced in this study, online learning has the potential to give learners who lack confidence the opportunity to escape peer pressure and succeed privately. Similarly, learners who are normally too shy to contribute in the classroom find it easier to join in with online discussions (KC).

At Kirklees Collegiates, an autistic child was reported by his parent to have difficulty concentrating online for extended periods, particularly in stressful situations such as under test conditions. The family developed solutions to address this in the home (printing out the work and supporting their child). However, the child's parent also expressed concern that online learning could have a negative impact on social interaction, which is an important skill for autistic learners to develop.

One (adult) learner with dyslexia noted that in traditional classroom settings it is easy to focus on verbal interaction and avoid written work. However, in an online environment, students are forced to confront written work and more carefully proofread their work. The learner commented that the spell check facility was particularly useful.

Parental engagement

At the Bridge Academy, the initiative is perceived by staff to have strengthened the relationship between school and home, although this is partly due to the equipment that is provided to students. Staff noted that parents can now find out more about what their children are doing. At the City Technology College Kingshurst, staff reported that parents are positive about remote learning because they can see examples of the learning activities that their children engage in. At Kirklees Collegiates, the extended learning tasks online were noted by parents to provide more opportunity to be involved in their children's work; the visibility of homework is increased.

“Her work is up to date. It [Bridge Academy Online] gives us a very positive start with the young people. It's a way in. We get to speak to their families; you can phone up to talk about how they are doing in BAO [Bridge Academy Online].”

Assistant headteacher, Bridge Academy case study

Other indicators of effectiveness or ineffectiveness

- One student at The Sheffield College suggested that a benefit of fully remote online learning is the opportunity to meet other students from all over the country (and potentially the world).

- At Leicester College, one benefit of online learning noted was that it is easier to liaise with other curriculum areas.
- At Villiers High School, it was noted that using an open source learning platform incurs no cost and, further, that adopting a widely used learning platform reduces demands on training (if users are already familiar with it).
- Staff at Villiers High School also perceive that the experience of working with female mentors (undergraduate science students) and female staff from the external agency motivated some girls to take more interest in science.
- At Villiers High School, the model facilitates access to external expertise in science, which enables the school to meet a skills shortage.
- One employer noted that online learning can widen access, enabling learners in the workplace to study if they cannot arrange day release to attend college.
- Another employer noted that online learning is likely to become more commonplace in the future, so it is important to have the relevant skills and for employers to understand how they can best support their employees.

What are the issues associated with remote, formal online learning? How have/might these challenges be overcome?

Institution

Local use

- As described above, sufficient access is required on site if online learning is mainly local rather than remote (TBA, CTCK, KC, MHS, LC, VHS). Pressure on resources constrains access for all learners, not just those engaged in courses that have a substantial element of online learning (MHS). One solution is to provide low-cost mini laptops for each learner; another is to invest in trolleys of laptops for shared use. However, this approach has implications for funding, infrastructure and technical support. If numbers on the roll increase (sometimes unexpectedly), institutions that fund learners' equipment suffer increasing costs.

'As one teacher put it: "We do have a lot of access to computers, but as an English teacher I find it incredibly difficult to book my class into the Pyramid or into a B-block room for computers, because it's often block-booked for subjects that have to have access all the time.'"

Teacher, Monkseaton Community High School case study

Remote use

- There is a potential for learners to be distracted at home and, in the worst-case scenario, to be disruptive in the community (TBA). However, there is no evidence to support the latter.
- Concerns about the digital divide (KC, VHS) were reported to be deterring institutions from developing fully online remote learning. Any digital divide could be addressed through facilitating personal access (VHS). There is a perceived need (LC) to facilitate out-of-hours access in schools and colleges (although this is not the perfect solution). If out-of-hours access is provided, there is an additional need to ensure that this facility is used to support students with a genuine need.
- Accessibility for learners is an issue. At The Sheffield College, course materials and tools are selected to ensure that high specification equipment is not required. Further, there are issues regarding support and liability if students are required to download third party software.

Technical issues

- Lack of interoperability between some learning platforms and MIS is perceived to constrain the potential for online learning to have an impact on efficiency (TBA, MHS, VHS). In addition, lack of interoperability places an additional burden on staff, who are required to manually transfer data between the two systems.
- Using technology that is not yet fully tried and tested within an institution leads to greater exposure to technical problems, with implications for technical and teaching staff (CTCK, VHS). For example, at the City Technology College Kingshurst, the chat facility available during live streaming lessons did not work between school and home (although it did between home and home).
- While broadband access is perceived to have facilitated online learning (KC), increasing use of online learning and Web 2.0 technologies is placing greater demands on bandwidth (CTCK, SHC).
- The choice of learning platform can be critical (CTCK), and some local authorities support a particular one. One way forward, for example, is for senior managers in schools to negotiate with the local authority and think ahead. Further issues may arise when contracts with learning platform suppliers come up for renewal and re-negotiation. Staff noted that switching learning platform could be a challenge because there would be a need for further training and some materials may not be transferable.
- In terms of storage and management, scaling up can place a burden on existing infrastructure (VHS). One solution is to arrange for storage to be

externally hosted by a company with server capacity and technical support.

- When institutions collaborate, there are tensions and issues regarding the use of different learning platforms (LC). Staff from different institutions in the WOLF project had different expectations of the features and functionality of the learning platform. This led Leicester College staff to duplicate resources in the college learning platform.
- If a student takes a collegiate course, the institution offering it must allow that student access to its learning platform from other participating institutions (KC). There is a need to consider choosing a common platform to minimise the challenges faced by learners (managing learning through more than one system).
- With regards to security issues (striking an appropriate balance between open access and tight control), there may be a need to be more flexible and trusting to most effectively support home access (CTCK, SHC). For example, there may be greater demands on technical staff to manage issues relating to user logins.

Curriculum issues

- Some subject areas require a certain amount of practical work, and there are limitations on what can be provided online (CTCK, MHS, VHS). More generally, it is thought by staff and learners that online learning lends itself more to some subjects than others (KC, TSC, VHS).
- Staff are reluctant to set firm deadlines when national performance measures are at stake (eg for GCSE coursework), yet less motivated students require greater structure (CTCK).
- Staff think that examination boards' requirements for summative assessment constrain opportunities; assessment is seen to be driving learning rather than the other way around (CTCK).
- University courses do not currently count in the points system that determines a school's position in league tables (MHS). Schools are naturally reluctant to offer courses that are not recorded in these tables.
- Materials for lower ability learners may need to be tailored for lower literacy levels (less text, simpler vocabulary, more visual cues) (VHS, KC).

Staffing issues

- Staff and learners need training to reap the potential benefits of online learning (KC). Staff need to change their attitudes and pedagogical practices. To do this, they need to be aware of the potential benefits of online learning and have a vision of potential uses.

- Because technology changes so rapidly, training programmes must be ongoing (KC).
- Staff turnover was noted to be an institutional issue (KC) which has implications for staff training needs.
- Teachers need time to learn how to use technological tools and to develop resources (KC, VHS). Solutions include providing technical and administrative support in house, and also employing external agencies to develop bespoke learning materials (VHS).

General issues

- Staff concerns with regards to meeting external agencies' requirements (eg a perception that paper records are still required by Ofsted) may be constraining innovation (CTCK, SHC).
- When working in a collegiate organisation (KC), there are specific issues relating to collaboration across institutions. Firstly, how do schools 'claim' a student's results for league tables when the student attends multiple institutions? Secondly, the competitive ethos of league tables works against collaborative enterprise and sharing resources.
- An overload of initiatives, curriculum changes and technological developments is constraining teachers' ability to engage fully (KC, LC, VHS). Some teachers have concerns that time spent creating resources will be wasted.
- While an organic approach to innovation is a good means of trying out new approaches without taking substantial risks, there are implications for equality in relation to student access (MHS).
- Funding in general is an issue. However, savings in staff salaries as a result of staff shortages in London were invested in resource development (VHS).
- A cap on funding exists, which amounts to four-and-a-half A-levels per student (MHS). With most schools offering four AS-levels as a core, there may be a financial incentive to keep all provision in house, which could act as a deterrent to engagement with additional learning pathways such as the YASS programme.
- There is a lack of consensus among employers and university admissions in relation to the value of distance learning. How favourably the YASS programme is looked upon by other higher education institutions and employers may depend to an extent on whether gatekeepers have any personal experience of the OU or distance learning, and whether they recognise the qualities a student may develop as a result of following such a course.

- Online learning at Villiers High School is still in its infancy, and the impact may be partially attributed to the novelty effect. It is unclear what the impact will be when the novelty wears off.

Teachers

Time and workload

- Pressure for staff to work out of office hours is increasing. For example, at the Bridge Academy, because planning, preparation and assessment time is largely allocated to a Monday, staff may need to do some preparation in the evenings.
- Creating online resources requires investment of time (KC). Outsourcing or bringing specialist technical expertise and support into the institution may reduce the pressure on staff (LC, MHS, VHS). However, such approaches can result in staff perceptions of a lack of ownership.
- At St Helens College, tutors are responsible for assembling and uploading students' e-portfolios, which has increased tutors' workloads. The responsibility for e-portfolios could be placed with students, but the transition may require careful management and guidance because students' expectations need to be addressed.
- A perception of lack of appreciation of staff for putting in additional hours is acting as a barrier (KC).

Pedagogical changes

- Staff may need to develop new skills such as creating age-appropriate online materials and working effectively with small groups, and may require training (KC).
- Effective use of online learning may require fundamental shifts in pedagogical beliefs and attitudes (eg regarding face-to-face feedback versus online feedback) (KC, MHS, TSC).
- Teachers may feel pressured to create sophisticated materials by using state-of-the-art technologies (KC, TSC). They need to be reassured that simple uses of technology are often more effective.
- Teachers should be encouraged to share resources (KC).
- Some staff think that their roles or expertise are being marginalised through technological innovation (MHS, VHS).
- Some staff are not yet sure whether Web 2.0 technologies have educational value (SHC).
- When involving external agencies and different stakeholders in the teaching process, individual expectations can differ (VHS). Careful

management and consultation is needed; procedures, roles and responsibilities need to be agreed.

- Some staff (VHS) miss personal contact with learners and feel that opportunities to follow up issues after practical sessions are constrained.
- Staff at Villiers High School perceive that some pedagogical activities would be more effective if teachers and mentors provided more focused guidance.

Assessment

- Some assessment practices that are facilitated by online learning (providing regular feedback to parents) are proving burdensome (TBA, CTCK). In such cases, institutions are reviewing and revising such practices to ensure that the processes are manageable.
- Lack of interoperability between some learning platforms and MIS results in duplication of effort (TBA). This is working against the potential efficiency savings offered through online learning.
- Online automatic assessment can be limited and requires careful planning (CTCK). Staff perceive a potential danger of putting a greater focus on the result rather than the individual.
- Some examination boards require hard copies of documents as part of the summative assessment process (MHS). This works against the potential efficiency savings offered through online learning.
- Initially, staff at Villiers High School were concerned about the impact of online learning and new pedagogical approaches on Key Stage 3 science assessment. In particular, they were unclear who should write teacher reports and what they should be based on.

Other

- There is a perceived danger that an online trail of teaching activity will be used to gauge teachers' success (CTCK).
- Staff lack confidence in the technical skills to facilitate online learning (KC). Furthermore, lack of appropriate pedagogical training in online learning is perceived to be a barrier (MHS).
- Some staff think it is difficult to motivate students in online environments (SHC, VHS). Motivation can be addressed in part by prompting and guiding students through the resources (in a fully online model rather than independent learning).
- Working with technological tools that are still in development and which are subject to technical problems can act as a barrier to staff engagement (VHS).

- Staff at Villiers High School are concerned about the pedagogical value of some games that are incorporated in the learning platform. One boy noted that the games did not appear to relate closely to science. The choice of games may require careful and more focused guidance from mentors or teachers, and others (teaching assistants, librarians) may need support and training to facilitate this.

Learners

Access and technology

- Learners without home access (including the internet) or who compete for access with family members are disadvantaged (KC, MHS, LC). This disadvantage can be addressed through policy initiatives that support home ownership and promote low-cost technologies. Learners must also be made aware of alternative provision facilitated by their institutions (TSC) or elsewhere such as in libraries and community centres.
- Learners may need to update software on personal devices at home (KC). There may be issues if learners are not aware of the need to update devices or do not know how to do it.
- Increasing remote access to learning platforms can affect system performance, which could deter learners (KC).
- Learners may expect materials to be as sophisticated as some of the resources they use for leisure purposes (KC).
- Technologies that are still in development can expose learners to more frequent technical problems (LC).

Time management and responsibility

- Learners need to be self-motivated and self-disciplined when working remotely (CTCK, MHS). Personal responsibility can be addressed through behaviour management techniques such as sanctions, but these need to be consistently enforced to make a difference.
- Some learners find that maintaining self-motivation remotely online can be challenging (SHC). They noted that it is easy to get disheartened if there are difficulties or material that is difficult to understand.
- When the underlying pedagogy, such as in the YASS scheme (MHS), relies on learners being fully responsible and independent, higher levels of self-motivation and commitment are required. In addition, learners need to understand their responsibilities fully. For example, the need to meet fixed deadlines for submission of work.
- Staff perceive that online learning can increase plagiarism and can be negatively affected by online distractions such as games and social

networking (CTCK, MHS, SHC, VHS). Learners need effective time-management skills (TSC).

- Part-time learners with competing commitments face time-management issues (TSC). Students' restricted availability can be addressed through underlying pedagogies. At TSC, it is assumed that learners will participate little and often.
- Learners who engage in online learning that has an underlying pedagogy focusing on collaborative approaches need to consider the impact on peers if they do not fulfil their responsibilities (TSC).

Social and health needs

- Learners reported that they missed social contact with their peers when working remotely online (CTCK, TSC). Communication tools can partially address this, but their use needs to be carefully managed to ensure that learners remain on task. Wholly (100 per cent) online learning is not perceived to be desirable (KC).
- Regular face-to-face contact at institutions that currently promote added-value models reduces the need to use online communication tools (LC, SHC). There may be a need to build communication into activities.
- Learners at Villiers High School expressed concerns that if teachers had access to students' instant messaging, that it would be an invasion of their privacy.
- Staff at Villiers High School expressed concerns about learners sitting in front of computer screens for two hours at a time. The librarian said that she asks learners to get up and stretch their legs about half-way through the lesson. Learners should be made aware of health issues relating to computer use, particularly if expected to work remotely.

Skills

- Poor basic literacy skills (eg being unable to use a spell checker) and lack of awareness of effective search techniques (critical literacy skills) constrain the potential impact of online learning (TBA, CTCK).
- Learners still need to acquire a wide range of skills such as the ability to use other educational content effectively for lifelong learning (CTCK).
- Learners need to develop confidence in communicating with adults remotely who they may not have met in person (MHS, VHS).
- Increasing use of online learning places demands on learners' technical and other skills (LC, TSC). The need for such skills may deter some learners from registering for online courses. Some learners noted that establishing online relationships was daunting (TSC), although this also has the positive impact of motivating students to solve problems

independently. Learners may require focused training and guidance to maximise the potential impact of online learning – for example, an introduction to the key skills required, such as managing interaction in chat rooms, at the beginning of a course (TSC).

‘One learner said that working online is “somewhat isolating, as [you are] working on your own all the time, but I find I put a lot more effort into learning online. Because you don’t have a tutor in the same room with you to ask straight away, I do tend to work at problems or try and find help independently before I ask the tutor for help.”

The Sheffield College case study

Engagement

- Learners do not always make full use of the online facilities (TBA, SHC). For example, some learners do not participate in forums (SHC). Teachers, students and parents at Villiers High School noted that not receiving an instant response to a query can be frustrating. It may be necessary to ensure that a teacher is online during the timetabled virtual lessons; however, this has implications for supporting small-group work.
- At Villiers High School, staff perceive that students interact more with staff in face-to-face settings; they do not yet seek feedback from mentors and virtual teachers. There could be a need to address cultural practices and learners’ expectations. In addition, learners believe there are more opportunities to work collaboratively in face-to-face lessons. A lack of opportunities to collaborate reflects a limitation of the underlying pedagogy (largely independent learning) and perhaps signals a need to address collaboration in future implementations.
- At Villiers High School, student–student instant messaging is enabled (and is currently not monitored by staff). The rationale is that instant messaging offers peer support. In practice, peer support is not yet happening and students are given sanctions if they are caught messaging in lessons, signalling that its use is inappropriate.
- Not all learners enjoy all aspects of online learning (MHS, CTCK). For example, some learners prefer to hand-write work. To maximise inclusion, alternative pathways (traditional as well as online) should be offered to accommodate individual needs.

‘One female student found the experience a little impersonal and indicated a preference for face-to-face contact: “When we did the video link classroom thing... I didn’t feel like he was teaching me – it was being broadcast on the internet, to anyone who was there – I didn’t feel it was necessarily for me.”

Learner, City Technology College Kingshurst case study

- Lack of support at home can deter students from engaging with remote online learning (MHS). This could be addressed by providing families with greater levels of support.
- Learners can find discussion forums off-putting if they do not contribute promptly; once others grab the opportunity, it can appear that a learner is simply repeating ideas from others (TSC).
- Learners perceive that online feedback on assignments can be brief (one or two sentences) (SHC). They may of course be receiving feedback more often, but not be aware of this.
- One student at Villiers High School expressed a number of concerns regarding the online learning. It should be noted that she is not representative of the students in general, but the issues raised illustrate an alternative perspective and may be experienced by other learners in similar situations. She had concerns about:
 - less contact (direct and virtual) with the class teacher
 - a lack of depth of materials and limited opportunity to be challenged intellectually
 - a perceived lack of adequate preparation for SATs assessments
 - being the focus of an 'experiment': not participating in a tried-and-tested approach
 - making mistakes because learning is largely self-managed
 - being mentored by adults who are not necessarily fully aware of her capability and less likely to push her as much as class teachers do
 - insufficient detail in feedback from mentors
 - insufficient opportunity for face-to-face contact with class teachers.

Parents

- One disadvantage of remote online learning, particularly for younger learners, is the care issue. At the Bridge Academy, care has not been a problem because extended family members are at home. However, the Bridge Academy example is currently on a small scale. At the City Technology College Kingshurst, remote learning off site has only been trialled on two occasions and only with students who may not require supervision at home (in Key Stage 4).
- Parents may need to be more involved in supporting learning at home (TBA). For example, there has been limited use of the facility to access children's work online (KC, MHS). Access to student data on attendance and performance could keep parents in touch with their children's education and potentially help with early intervention. Some hard-to-reach parents could be reached more easily online, but there is no evidence that this is occurring. Parental involvement is a long-standing issue and

requires additional support and educational programmes to be put in place.

- Some staff and parents think that students may not have the skills (time management, self-organisation) to learn effectively through an online approach (CTCK, KC). A survey conducted by the City Technology College Kingshurst suggested that only three out of 217 parents were concerned about students' skills.
- Other parental concerns raised in focus groups at Kirklees Collegiates and Villiers High School include:
 - competing distractions such as instant messaging and social networking sites (KC)
 - the need to motivate some students (KC)
 - the implications of a lack of supervision by fully trained teachers (VHS)
 - a lack of student awareness of how to seek help and guidance online (VHS)
 - a lack of hands-on activities (VHS)
 - overreliance on text (VHS)
 - e-safety issues (VHS)
 - the lack of immediate feedback from online teachers and mentors (VHS)
 - implications for staffing (impact on skilled teachers) (VHS)
 - plagiarism (VHS)
 - what happens when students complete all activities, especially when they do so much more quickly than the rest of the group (VHS).

'There was a concern among parents that genuine engagement with knowledge and creativity is at stake in the "cut and paste generation". One father thought that the creativity that comes out of collaborative learning is endangered by online learning.'

Kirklees Collegiates case study

Employers

No issues relating to remote online learning were raised in interviews with employers.

Does engaging with informal online learning affect the learner's willingness to engage in formal learning, either at the same time or later in life?

Limited anecdotal evidence from the eight case studies was identified, but this was largely in relation to learners' recent experiences with formal online learning rather

than linking their informal learning experiences to a willingness to engage in formal online learning.

Staff at the Bridge Academy suggested that some students re-engage with learning and continue with formal learning after leaving the academy. Students at the Bridge Academy suggested that they would continue to consider courses with an online element.

Many students, however, expressed a preference for a blended learning approach (TBA, CTCK, KC, MHS).

Learners (mature students) at The Sheffield College indicated they would be willing to participate in online learning again, depending on the subject matter.

Students at Monkseaton Community High School reported positive experiences with YASS courses, which lead to further engagement with online learning.

Conclusions: implications for practice

The research highlighted many points including: a consideration of the term 'formal online learning'; the feasibility of formal online learning; and the pedagogic, organisational and technological aspects of online learning. These are all discussed below.

Defining formal online learning

At an early stage of the research, it became apparent that there is no single shared definition of what formal online learning means, so initial research was undertaken to explore, with key stakeholders in the field, the range of understandings. The resulting inclusive definition of formal online learning was used in the subsequent research.

Formal online learning is considered to:

- make use of networked electronic devices to support or facilitate one or more area of learning, teaching or assessment
- lead to accreditation through the use of summative assessment
- take place primarily at a distance, primarily face to face (eg using computers in classrooms), or a combination of the two
- support directed learning, independent study or a combination of the two.

However, it became clear in subsequent research that this definition was still not explicit enough. For example, it is unclear whether a document downloaded from the internet but read offline or printed out is counted as online learning. The distinction here is perhaps one of terminology, and it may be more useful to refer to, say, 'technology-enhanced learning' as a more encompassing term.

Feasibility of formal online learning

It is clear from the examples described in this report that various models of formal online learning are feasible at Key Stage 3 and age 14–19. The four key findings with regard to feasibility are:

- The degree to which certain models are appropriate depends on the age and maturity of the learners and the degree of autonomy they exhibit, as well as on the underlying pedagogy.
- The fully online and independent learning models involve a higher degree of autonomy and are more appropriate for older learners.
- The value added and flexible integration models are more appropriate for less autonomous learners, and the flexible integration model provides most scope for supporting different adaptations and the development of autonomy.
- There are no ideal models of formal online learning, but various factors – such as student demographics, location, staff skills, and parental expectations – influence what is appropriate in a given situation.

Funding issues

The sale of online learning resources can be a significant income stream for a school or other institution. If schools sell resources to one another, it could be argued that money is merely being pumped around the system. Moreover, complex intellectual property relationships could spring up as a result.

Free resources are available from a variety of sources. For example, a product from one of the regional broadband consortiums (RBCs) consists of an online course which is free to users because the material is developed using RBC core funding. Furthermore, users can adapt and re-use the material as they require, without incurring licensing costs. Compare this with the cost of buying into a typical online course from Thomas Telford Online, which is around £3,000 per year for two years.

Open educational content (eg Open University courses offered through OpenLearn or <http://www.opentextbook.org>) is a growing phenomenon within the higher education sector. Encouraging schools and further education institutions to collaborate could address some of the funding issues. Schools and teachers have a good record on collaboration; this is evidenced by the various professional bodies of teachers that design syllabus content for different exam boards. Open models of collaboration could generate higher quality materials through an evolutionary process and be much more cost-effective for the system as a whole.

When a course is well established and has a fairly rigid content set (eg the St Helens College ITQ course), maintenance costs are lower and online learning can deliver

greater cost-benefit. Regarding delivery costs, however, to maintain established good practice in terms of tutor–student ratios (eg the LeTTOL course at The Sheffield College), the costs of the course will increase as additional tutors are recruited for increasing student numbers.

Students who are referred to the pupil referral unit level of education are those who are in real danger of ending up in the criminal justice system in the long term. The cost of being in the criminal justice system (custodial) ranges upwards from £25,000 per year.² If online learning can encourage some engagement in these students' education and hence reduce the likelihood of them ending up in the criminal justice system, online learning pays off in the long run. Pupil referral units are well funded on a per student basis at about four times the funding of a regular school place. Therefore, the equipment cost quickly becomes negligible if any significant amount of online learning takes place at home. Low-cost technological solutions may offer an alternative approach.

Pedagogic aspects

- Online learning has the ability to fundamentally change the ways in which teachers approach education, learners and teachers interact, and learners gain knowledge, skills and understanding. In the design of online courses, it is essential that the focus is on the pedagogy rather than the technology. In designing online learning materials with limited resources, consideration should first be given to the elements that will be most effective and add the most value.
- Remote online learning has the potential to support greater personalised learning, particularly because learners can choose when and where to learn.
- Learners need to be supported in the development of autonomy (personal learning and thinking skills) throughout their school careers and as lifelong learners. A focus on time-management techniques (both for staff and students) is particularly important in an online context. Online courses provide opportunities to increase learners' motivation, support the development of independent learning skills, and help students take responsibility for their learning.
- Reconsideration of the way in which online courses are assessed is essential if assessment is to be an appropriate learning experience in itself as well as an authentic, reliable and fair way of measuring learning.

² House of Commons Hansard written answers for 9 January 2007 [<http://www.parliament.the-stationery-office.co.uk/pa/cm200607/cmhansrd/cm070109/text/70109w0018.htm>]

- As online learning blurs the boundaries between school and social spaces, it is crucial to develop guidelines on privacy and the effective establishment of social relationships online.
- There is great potential for a range of online pedagogic tools but, at present, this area appears from this study to be underutilised in most institutional implementations of online learning.
- There is a trade-off between the benefits (such as peer support and the potential of group work) of an online community and the flexibility afforded by independent online learning. For students in Key Stage 3 and at age 14–19, peer interaction and group support is likely to be of greater importance.
- Remote online learning could introduce issues such as authenticity (is the work the student's own?) and a requirement to monitor online activity, which has implications for workload, particularly in independent learning models. In a classroom setting, effective use of time is more immediately apparent.
- The current emphasis of regional and national policies appears to be on facilitating access to assessment data, reporting targets and generating data for central statistics. There is a danger that this emphasis will drive online developments rather than a focus on supporting learning more effectively.

Organisational aspects

- For formal online learning to be appropriately embedded within the institution, it is essential to ensure a robust and equitable model for managing staff workload and rewarding staff. Staff timetabling issues and estate issues will become increasingly important as online learning is increased.
- Remote online learning (whether on site or off site), particularly with the involvement of external agencies, can effectively address staffing shortages. Online content was seen by teachers to be of huge support when teachers were working outside their own specialist areas.
- There is potential for staff to work more flexibly (at any time and anywhere), but this has yet to be fully explored, although one institution has clearly implemented this successfully. In addition, managers need to communicate expectations regarding time boundaries to staff who do not want to work more flexibly. Decisions about facilitating synchronous communication will need to be made. Official hours of work could be extended through shift working. There is a need to consider formalising flexible approaches by creating posts for online teachers. Formal qualifications for teaching online may be needed to maximise the potential impact and to fully exploit the possibilities.

- New schools and new builds of further education colleges are being planned where the student population will outstrip the planned estate provision. Remote online learning will be a necessary means of transforming teaching and learning in such contexts.
- Staff enthusiasm and school ‘champions’ are crucial drivers of online learning initiatives. Ways of ensuring and supporting this drive and enthusiasm from the bottom up need to be explored, but strategic support and strong leadership from the top are also essential, particularly when far-reaching organisational change is required to adopt a model of online learning.
- There are different models for managing staff training and support, for example training enthusiasts and early adopters to act as peer mentors, providing training from a central support unit, or using a rolling train-the-trainers model. Different options are more appropriate in different situations. However, there is clearly a need to continue to provide effective staff development in the use of online learning.
- To date, widespread implementation of remote online learning off site is untested. Although pilots suggest that parental concerns may be minimal, as implementations are scaled up, it is likely that identified concerns such as learners not working independently or students causing problems in the community will arise, together with issues that are not yet foreseen.
- Lack of interoperability between learning platforms and MIS affects potential efficiency savings. Interoperability is becoming increasingly important as schools invest in both systems. MIS are dominated by a small number of companies that run proprietary systems. Institutions, particularly those developing learning platform solutions in house, may need to negotiate with MIS suppliers to ensure that assessment data can be easily transferred. The ability to transfer data could be facilitated through plug-ins. For institutions to fully support real-time reporting to parents, it is essential that the issue of interoperability is resolved. It may also be useful to provide plug-ins to export calendar calls in relation to timetabling from learning platforms to MIS.
- In-house solutions, which are tailored to meet the needs of an institution, appear to be flexible but demand technical expertise (although this can be sourced externally). Once institutions have bespoke systems and experience of ICT solutions that specifically meet the needs of staff and learners, staff can become more aware of possibilities and critical of off-the-shelf packages. If a learning platform is purchased off the shelf, it is important that it is simple to use and provides a range of tools to deliver learning and facilitate communication and collaboration, both within an institution and between institutions.

- External agencies can support and promote the development of remote online learning, offering expertise, staffing and in some cases funding to enable exploratory work. However, to ensure sustainability, funding is required either by accounting for this provision in staffing costs and/or by marketing the remote online learning resources and/or approach in order to generate revenue.
- Technical and administrative support for teachers will become increasingly important as initiatives are scaled up.
- As remote online learning increases and boundaries between school and home blur, there is a need to establish protocols and procedures for dealing with e-safety issues, particularly in relation to teacher–student communication.

Technological aspects

- A major limitation of formal online learning is the lack of access to reliable and robust hardware and infrastructure, both at school and in the home. As initiatives are scaled up and there is an increasing use of audio and video data together with learner-generated content, there is a need to ensure adequate provision of storage and bandwidth so that system performance is not noticeably affected. There is a need for protocols and systems that enable students to access the content and web resources they need, without ‘blanket blocking’ sites.
- Developing appropriate cost models to achieve the levels of technological access required will continue to be a challenge. However, encouraging and supporting personal ownership of low-cost technologies could offer a practical solution.
- Consideration needs to be given to the interaction between formal learning sites (eg learning platforms) and informal learning sites (eg social networking), and there should be debate about which learning sites are legitimate for learning at school and which should be endorsed by the institution.
- There are issues around the perceived generational skills gap between students and their parents and teachers. Opportunities need to be provided to both increase skill levels and levels of confidence in the use of technology for staff and parents. However, it should also be recognised that while students appear to have high technical skills, they may still lack the specific skills required to reap the full potential of online learning.
- A final point to make in relation to this research into models of formal online learning is that although there is anecdotal and small-scale evidence of its effectiveness, there is a clear need for more large-scale long-term studies on its impact on learning, student motivation, widening

access and the role of the teacher. Only by undertaking more research of this type will it be possible to fully understand the impact of online learning.