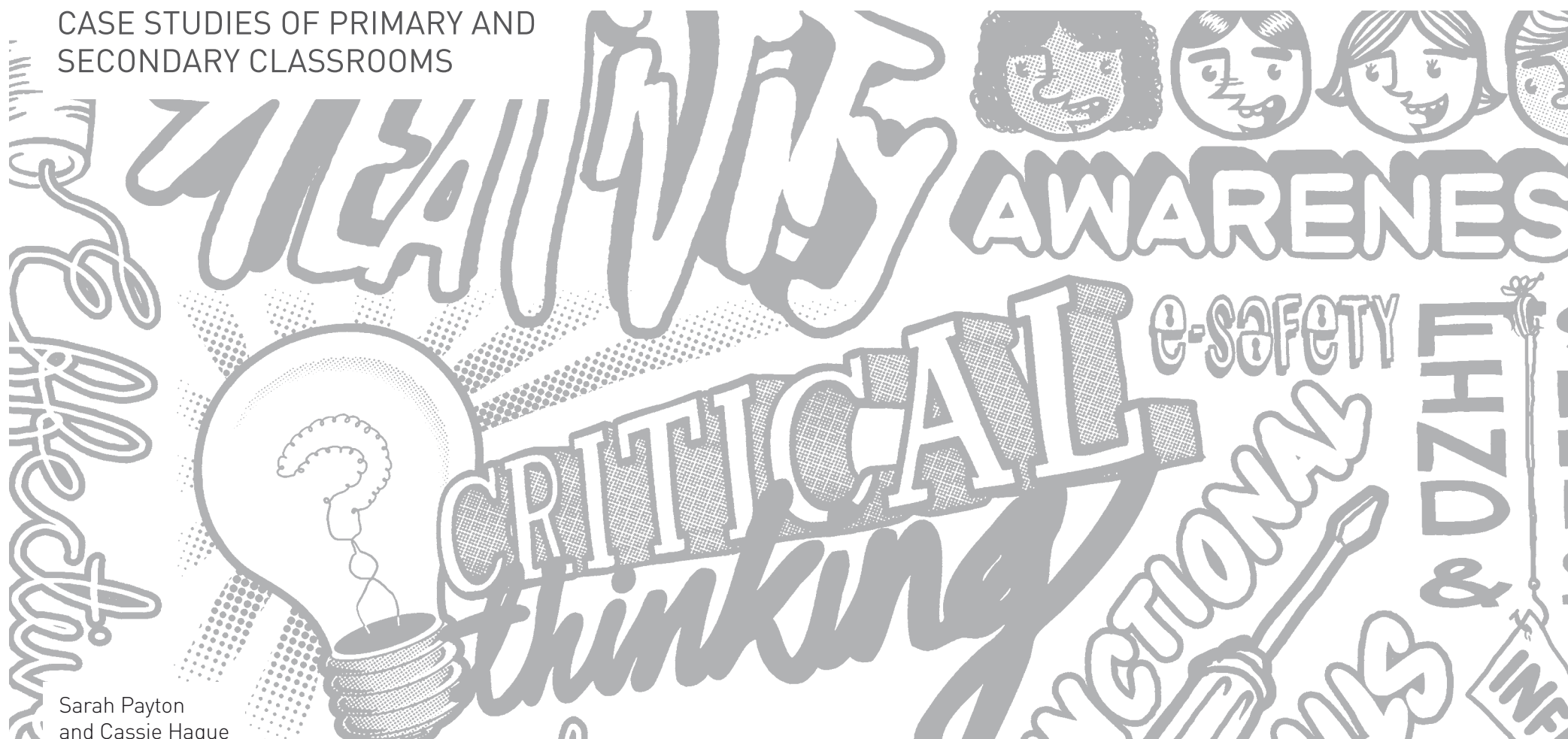**future**lab
innovation in education

Digital Literacy in Practice

CASE STUDIES OF PRIMARY AND SECONDARY CLASSROOMS

This document relates to the following Futurelab research themes. See page 59 for the key to themes.

Sarah Payton
and Cassie Hague

Contents

Introduction

Primary School Case Studies

Secondary School Case Studies

Conclusions

Appendix

Digital Literacy in Practice

Contents

Introduction to digital literacy

This document provides a set of digital literacy case studies. Each is an account of a number of activities developed, planned and undertaken by a teacher as their first steps towards integrating the development of students' digital literacy into their everyday practice.

The case studies are the result of Futurelab's year-long Digital Participation project in which researchers worked with primary and secondary school teachers in order to co-develop approaches to fostering digital literacy in the classroom.

Schools are increasingly encouraged to embed the use of ICT in all subject areas across both the Primary and Secondary curricula and a focus on digital literacy is an important element of current curriculum reforms.

Although there has been increasing policy and research attention to issues related to digital literacy, there is still relatively little information about how to put this into practice in the classroom.

There is even less guidance on how teachers might combine a commitment to digital literacy with the needs of their own subject teaching. How can digital literacy be developed, for example, in a maths or science lesson?

Digital Literacy in Practice

Introduction to digital literacy

This document is aimed at educational practitioners and school leaders in both primary and secondary schools who are interested in creative and critical uses of technology in the classroom. It is hoped that these case studies, along with the short discussions of how the activities could be further developed, will support teachers by sparking ideas, giving confidence and stimulating further thinking around developing classroom approaches that advance both digital literacy and subject knowledge.

These case studies are published alongside a Futurelab handbook for teachers which explores the importance of digital literacy and suggests some pedagogical techniques for fostering digital literacy at the same time as supporting the development of subject knowledge. Together, these documents are intended to go some way in addressing the lack of guidance on how digital literacy might be put into practice in school classrooms.

Becta have also recently published teacher guidance on digital literacy, alongside a framework for digital literacy, which aims to support teachers in planning a process that can cultivate students' digital literacy from within subject teaching.[1]

How can digital literacy be developed, for example, in a maths or science lesson?

[1] Becta's digital literacy guidance and framework can be found at: schools.becta.org.uk/index.php?section=tl&catcode=ss_tl_dl_02

What is digital literacy and why is it important?

To be digitally literate is to have access to a broad range of practices and cultural resources that you are able to apply to digital tools. It is the ability to make, represent and share meaning in different modes and formats; to create, collaborate and communicate effectively and to understand how and when digital technologies can best be used to support these processes.

Digital literacy involves critically engaging with technology and developing a social awareness of how a number of factors, including commercial agendas and cultural understandings, can shape the ways in which technology is used to convey information and meaning.

It means being able to communicate and represent knowledge in different contexts and to different audiences (and, for example, in visual, audio or textual modes). This involves finding and selecting relevant information and critically evaluating and re-contextualising knowledge and is underpinned by an understanding of the cultural and social contexts in which this takes place.

The increased prevalence of technologies in contemporary society provides many exciting possibilities for young people's learning, creativity and self-expression, both inside and outside of school. Young people use technology more than ever before to communicate, to find information on the internet, to play games and to share and sometimes create music, videos or other digital media. In addition, digital technologies can expand where, when and with whom children learn, as well as affecting how information and subject knowledge is produced and communicated.

However, it is important that all young people develop the skills, knowledge and understanding required not only to make discerning use of these opportunities, but also to question them and recognise the challenges associated with digital technologies.

Digital literacy is an important entitlement for all young people in an increasingly digital culture. It furnishes children and young people with the ability to participate in a wide range of practices that will help them to develop knowledge, as well as supporting their engagement with digital technologies. Indeed, if formal education seeks to prepare young people to make sense of the world and to thrive socially, intellectually and economically, then it cannot afford to ignore the social and cultural practices of digital literacy that enable people to make the most of their multiple interactions with digital technology and media.

Developing digital literacy across the curriculum is about more than motivating and engaging learners with digital technology; it is about supporting young people to make sense of the world and to take a full and active part in social, cultural, economic, civic and intellectual life both now and in the future.

Digital literacy is an important entitlement for all young people in an increasingly digital culture.

The components of digital literacy

Digital literacy is made up of a number of components. The teachers involved in the Digital Participation project aimed to foster these components of digital literacy whilst at the same time developing their students' subject knowledge.

Each case study contained in this document highlights where activities were aiming to foster particular elements of digital literacy.

Digital literacy can be understood as the space where all of these components overlap. More information about each component is offered in the table opposite.
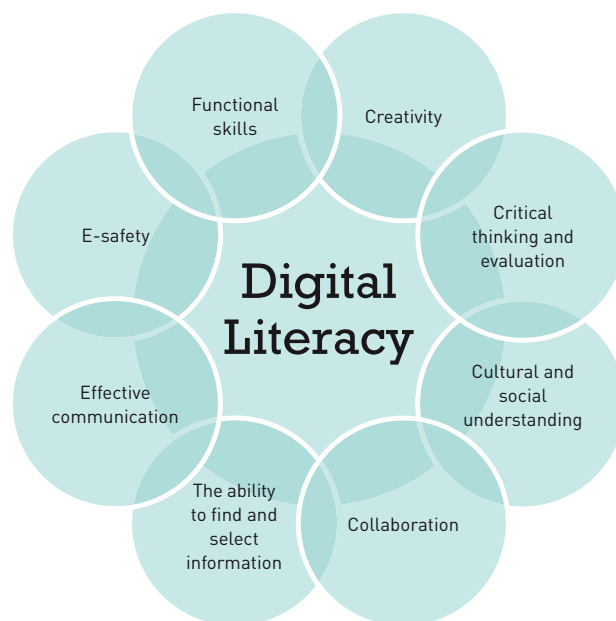
Creativity
The ability to think creatively and imaginatively, and to use technology to create outputs and represent knowledge in different formats and modes. Knowing when and how digital technology can support creative processes, and thinking creatively about technology and with technology.

Critical thinking and evaluation
Being able to use reasoning skills to engage with digital media and its content, to question, analyse, scrutinise and evaluate it and to formulate and support arguments about it and the way it is used. Critical thinking involves being reflective, developing insight about underlying assumptions, interpreting meaning and determining significance in order to understand and make sense of the world.

Cultural and social understanding
The ability to recognise that there are social, cultural and historical influences that shape the creation of digital content and our understanding of it. This involves understanding how your own and others' perspectives have been informed by cultural heritages and being aware of the social and cultural contexts in which digital media is created and used.

Collaboration
The ability to work successfully with others to collaboratively create and share meaning and understanding. To develop the skills of team work, to be able to work together when using technology and to understand how technology can support collaboration both inside the classroom and in the wider world.

The ability to find and select information
To define what sort of information you need for a task or activity, to know where and how to find information, to critically engage with sources to select relevant, valuable and reliable information and to be aware of intellectual property issues related to plagiarism and copyright.

Effective communication
Being able to clearly express ideas and feelings so that others can understand them. Having an understanding of the different modes (visual, audio, textual etc) in which meaning can be represented and showing an awareness of the needs of particular audiences. Understanding how technology can support this and how to communicate effectively using different types of technology.

E-safety
The ability to stay safe when using digital technologies, such as the internet and mobile phones, and to understand what constitutes appropriate use and appropriate content.

Functional skills
Knowing how to use a range of different technologies competently and having the skills and flexibility to adapt this knowledge to learn how to use new technologies.

Contents

Introduction

**Primary School
Case Studies**

**Secondary School
Case Studies**

Conclusions

Appendix

Developing digital literacy in the classroom

Developing digital literacy in schools involves designing classroom activities that foster the components of digital literacy, as well as supporting curriculum subject knowledge.

These activities need not address all the components of digital literacy at the same time, nor do components need to be fostered in any particular order. Creating a digitally literate classroom is about developing regular opportunities for digital literacy in curriculum learning and recognising how digital literacy can support students to learn in new ways.

In the following case studies we have highlighted the components of digital literacy and some of the key concepts and processes that can support digital literacy development.

The activities contained in these case studies do not represent the last word on how to develop digital literacy. Whilst each of the activities reported here effectively foster some elements, the teachers planned to further refine these activities and supplement them in order to ensure the development of all aspects of digital literacy.

The Becta framework for digital literacy

There were a number of processes that teachers went through to foster these components of digital literacy. Some teachers made use of Becta's framework for digital literacy, which is also accompanied by some teacher guidance and a learner checklist on digital literacy.

This framework suggests that teachers ask their students to **define** a project or task, to **find** information to help them to complete that task or project. Students need to **evaluate** and analyse the information they have found, synthesise it with their pre-existing knowledge and re-contextualise it in order to create an argument or come to a new understanding about the subject. Students are asked to **create** an output, often in a format or mode of their choice, which will help them **communicate** what they have learnt. At each stage of the process students need to ascertain when and how they feel it is appropriate to use specific digital technologies and consider how technology can support them.

As students move through this process, they will need to reflect on what they have been doing and what they have been learning. It may not always be a linear process and may involve students returning to each stage to refine their task or activity, or to re-evaluate information. They may be communicating or creating at any stage of the process and will need to critically engage with their task throughout. Teachers can ask students to work in small groups and collaborate to complete this process, and some teachers may prefer to concentrate on particular elements of the framework or process, or adapt it to suit their objectives for a given piece of work.

For a copy of the framework, see the Appendix.

About these case studies

This document is the result of a one year research project in which Futurelab researchers worked with eight primary and six secondary school teachers in order to co-develop approaches to fostering digital literacy in the classroom.

The project was informed both by a review of the research[2] literature in the field and meetings with a number of academics and researchers known for their work on media, information and digital literacies.[3]

The teachers involved in the project worked with researchers and other teachers to explore the concept of digital literacy and its relation to subject learning and to think about how they might support their students' digital literacy from within work already planned and scheduled for a particular half term. They designed teaching activities aimed at developing digital literacy alongside subject knowledge and trialled these activities in their own classrooms.

The following case studies provide details of the activities undertaken by the teachers and their students. At the end of the document, a summary draws together teachers' experiences and discusses some of the implications for teachers and schools wishing to develop their own approach to digital literacy.

[2] Hague, C and Williamson, B (2009). Digital Participation, Digital Literacy and Schools Subjects: A review of the policies, literature and evidence. Bristol: Futurelab. Available online: www.futurelab.org.uk/resources/documents/lit_reviews/DigitalParticipation.pdf

[3] Thanks is therefore due to Guy Merchant, Julia Davies, Andrew Burn, John Potter, David Buckingham, Cary Bazalgette, Josie Fraser, Martin Waller and Tabetha Newman

Acknowledgements

Digital Captain's Log

Your mission: Create a
video diary to describe to
your class the experience
of exploring another planet.
Use internet research to
boost your imagination
and creativity.
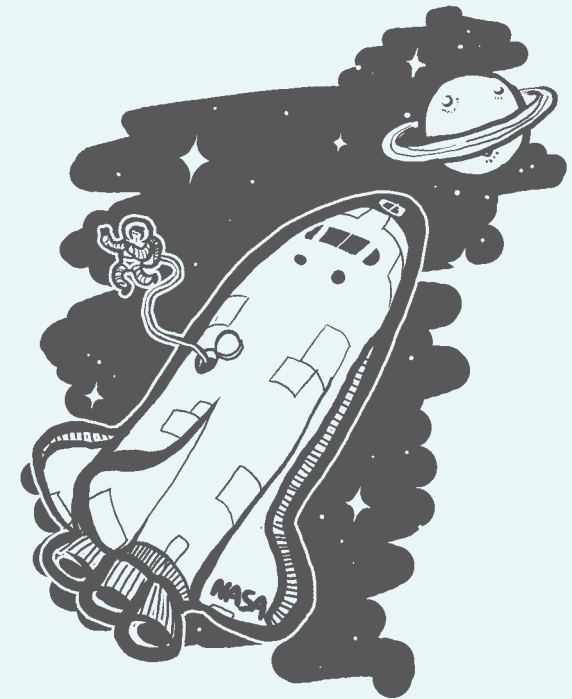
Digital Captain's Log

Laraine Harris, Deputy Head at Charborough Road Primary School was planning a themed cross curricular unit of learning entitled 'Space: the final frontier' for her Year 3 students. She wanted to use this as an opportunity to support students' digital literacy.

The project aimed to improve the children's internet research skills, particularly their ability to assess the relevance and reliability of digital sources. In the past, when starting a new topic of learning in class, children would often come in to school with pages of information downloaded from the internet that were difficult to understand and often not relevant.

"There's no selectivity. They just think 'oh there's a page about Romans'. They don't actually read it, they print it out and bring it in, but they think they've done some research and that's it. They haven't actually got any content from it."
Year 3 teacher

The project would also explore the use of digital video cameras to support the development of descriptive language and effective communication, as well as asking students to consider how to represent information in video format.

Following a piece of drama, in which Laraine blacked out the classroom and used a film of a rocket launch to support the children to imagine starting a journey into space, they were given a mission to produce a video diary documenting their travel to another planet.

To do this, the students researched information about a particular planet and developed their use of sensory and descriptive language. The aim of the project was to create a Digital Captain's Log to describe for their peers the fictional experience of exploring the planet using what they had learnt from their internet research to inform their imagination and creativity.

As a class, they looked at some websites together and discussed how to search within a particular webpage to find the information they needed.

"At first it was hard, we didn't know where to find the information. Our teacher helped."
Year 3 boy

Laraine then provided them with five key questions about the planet they were investigating, to focus their research. The children worked in small groups to search for the information from a given set of three websites.

"The internet helped us, we found out more facts."
Year 3 girl

Laraine encouraged her students to engage with the content of their research by reminding them that they would need to re-contextualise this information in order to successfully communicate their learning to others.

Laraine felt it was important to let the children have time in which to explore and play with the new cameras. The children used these sessions to rehearse and reflect on their learning and used the cameras to record what they had learnt during the research process. They practised sentences using the descriptive and sensory language they had explored in a previous lesson to describe the planet they had researched.

During these sessions the teacher also supported the children to consider the functional skills needed to use the cameras effectively, such as how to hold the camera and how far to be from the person they were filming. They also discussed the limitations of the cameras and were asked to evaluate their suitability for the purpose. They discovered the cameras picked up a lot of background noise and were encouraged to consider this when they moved on to film their Captain's Log.

"Instead of having to write it down, you can film yourself saying it then you can just look back and see what you've done."
Year 3 boy

In the final sessions, Laraine supported the children to plan their Captain's Log, thinking about their audience, what information to include and how to use descriptive language to enhance their communication. The children worked in pairs to film their Captain's Logs, which they then showed to each other in class.

Digital Captain's Log

Contents

Introduction

Primary School Case Studies

Secondary School Case Studies

Conclusions

Appendix

Successes and next steps

The children articulated two clear benefits of using the digital cameras in this way. They found them useful as a way of recording their own learning and were excited about the possibilities of distilling the information they had found out into a short film that would support their peers to learn. They showed an awareness of purpose and audience.

"People we're telling will get to know more facts."
Year 3 girl

Providing the children with research questions and three websites to choose from helped them to focus their research and not to become overwhelmed by the amount of information available to them. As the children's independent research skills develop Laraine will be able to gradually decrease the amount of support she gives them.

In order to for students to develop their digital literacy they need to be supported to think critically about the information they are researching on the internet. There was some indication that these children had considered the sources of their information.

"Some websites may not tell the truth."
Year 3 girl

"Some websites were better than others."
Year 3 boy

As their digital literacy skills develop, critical thinking around the reliability and veracity of websites should to go beyond concepts of truth and usefulness. As they continue to create with digital technology themselves, students can be helped to question and to understand how the digital media world is created by others. Just as they have created a digital film for a particular audience, so websites they visit have been created for certain audiences.

Encouraging students to make reasoned choices between different sorts of creative outputs such as, for example, videos, websites and podcasts, will also support digital literacy development if children are helped to think critically about the suitability of the technology for their purpose.

Contents

Animated Stories

Creative writing brought to life for new audiences using a digital camera, a PC and a lump of Plasticine.

Case Study 02/10   Futurelab

Animated Stories

Tim Browse, Deputy Head and Year 3 teacher and Alexa Vickery, Year 4 teacher at Headley Park Primary School, wanted to develop children's digital literacy through the re-creation of written stories into alternative formats for new audiences.

They undertook a piece of work that aimed to foster collaboration, which was also a current whole school focus, and creativity, by giving students the task of turning one of their own written stories into an animation for younger children in the school.

"We wrote stories, then turned it into an animation, like a fairytale."
Year 3 boy

In order to support the children in situating the task in a cultural and historical context, the teachers and students spent the first sessions looking at animation and exploring its history and the way it has been used to represent and communicate stories with different meanings and for different purposes. They watched older drawn animations and more recent animated films with computer generated images (CGI) and compared them.

They also discussed how stories need to change in order to be represented in an animated form.

The children were supported to think this through by considering what four key moments of their written story they were going to represent in animation, and which characters needed to be involved. They then considered how they could represent these moments in a different format and for a different audience.

The children then storyboarded four scenes on paper, with red arrows to show how the characters were going to move.

The children collaboratively created their animations by using a variety of software and hardware. Some used the simple drawing application Paint to create their four key scenes and then uploaded them to a set of teacher-prepared PowerPoint slides. Other children worked in groups to create stop-motion animations, making Plasticine models of their characters, moving them in small, sequential steps and photographing them with a digital camera at each point. The photos were then uploaded and 'stitched' together using Windows Movie Maker to make an animation.

Contents

Introduction

Primary School
Case Studies

Secondary School
Case Studies

Conclusions

Appendix

Successes and next steps

The children enjoyed bringing the characters of their stories to life though the animations and reported feeling a sense of achievement:

"I made a movie! I didn't think I could make a movie with models."
Year 4 boy

The children had some awareness of audience and were able to discuss how they had made their stories simpler and easier to understand for a younger audience. They also acknowledged that they had to develop their collaboration skills in order to complete the task.

"I actually found it OK working in groups. Well, one person thought it was all about her though, we had to calm her down and get on with it and then it was OK."
Year 4 girl

The children had whole class discussions around what they already knew about animations, and they learnt about how animation has changed over time. This provided some context and cultural understanding for the children. To extend this, their own experiences of watching and creating films and animations could have been drawn on. Some children reported having made their own films and animations at home in the past and were keen to be able to bring their experiences, knowledge and understanding into the classroom context.

For example, several children had previous experience of using Windows Movie Maker

"At home I got some of my dad's pictures and made a movie with Windows Movie Maker."
Year 4 boy

Students could also have reflected on and evaluated the animations they had made, considering why they had chosen to present them in such a way, what previous experience they had used to make decisions about how to create the animation, and whether they felt they had created an output suitable to the target audience. They could also have considered which format and which technologies were most successful for the purpose.

Recording, Reviewing and Evaluating Learning

Christmas decorations with flashing lights! How a group of Year 4 students produced a multimedia presentation to document their electricity learning.

Recording, Reviewing
and Evaluating Learning

Key Stage 02
Science

Neil Woodcock, a Year 4 teacher, ICT coordinator and member of the senior management team at Luckwell Primary School, was a key player in developing the school's new curriculum which is organised around themes. Neil was keen to ensure ICT was meaningfully embedded across the curriculum rather than being seen as a separate lesson in which functional skills were taught.

Children at Luckwell can participate in designing their curriculum by voting for the topic they'd like to study within each themed block of learning. As part of their seasonal theme of Christmas, Neil's Year 4 children had chosen to learn about electricity by making Christmas decorations that lit up, using circuits that incorporated LEDs.

Neil wanted to incorporate digital literacy into this work through the collaborative use of video cameras, stills cameras and audio recorders to document, review and reflect on their experimentation with circuits and their plans for their Christmas decoration.

"Children will be able to see what they have done [in constructing their circuits] and use the video of it to spot errors. Children can also use the videos to record sets of instructions and creating sound files enables children to speak about their learning and discuss their plans, meaning that the theory that they learn is more embedded."
Year 4 teacher

Neil wanted the children to communicate their learning to their peers and their parents via a multimedia presentation. He was keen that they should think carefully when choosing what to include in the presentation from the array of media that would be available to them. Importantly, Neil wanted the children to think about what they had learnt and how they should record their learning.

"This will mean the children need to consider the level of detail involved and what they can assume the audience already knows. They will also be selecting the images, video and sound files they want to use from a selection of lots. So they need to be very precise about their purpose."
Year 4 teacher

Recording, Reviewing
and Evaluating Learning

What they did

Following some initial lessons on electricity and circuits, the children planned what their Christmas decorations would look like and began to investigate suitable circuits.

Neil gave the children the responsibility of choosing their groups of two or three, stressing that they should choose to work with people they knew would help them to learn.

During all the following sessions a range of digital stills cameras, digital video cameras and digital voice recorders were available for the children to use as and when they wanted to record their plans and their learning.

"The first week of the project saw the class using the videos, cameras and microphones when they were experimenting with electricity. Recording their circuits that worked and didn't work."
Year 4 teacher

The students worked together in groups of two or three and made joint decisions around the design of their Christmas decoration, including what types of circuit and colours of LED to use. As they collaboratively experimented with circuits, Neil reminded them to consider how to record those 'that worked' so they would remember them.

The children then used the software '2create' to produce a multimedia presentation, documenting their learning. Children needed to sort through their video clips and sound files and choose to include ones that not only best represented their learning journey but that also would be understood by their audience, which would be their parents and peers.

Successes and next steps

Although the digital technology was not the focus of the learning in this piece of work, the students were clear about the purpose of using the digital cameras and voice recorders to document their learning and their perceived advantages of doing so:

"The cameras are good if you forget something, you can look back. We used it to record what we're going to do, we've recorded our plan."
Year 4 student

"You can remember it better, you can see what you've done."
Year 4 student

Students developed their group decision-making skills by deciding which pieces of information needed to be recorded. They were also able to comment on their collaboration skills, saying:

"We had to make sure we were in a group where everyone would work well together. It's going well."
Year 4 student

Making the multimedia presentations gave the children the chance to reflect on their learning journey and remember how they had achieved the creation of their Christmas decoration. They also began to develop some audience awareness by having to choose which video and audio clips to include in their presentation.

In this project students were using digital technologies to record their experiences for two very different outputs. One was to support their learning, to enable them to remember successful circuits they had created. The other was to document their learning process for an audience. In further work students could evaluate the technologies they had used, in terms of whether the same technologies were appropriate for each task.

Case Study 03/10   Futurelab

Contents

Digital Prospectus

An online school prospectus.
Written, directed, produced
and starring the students of
Knowle Park Primary School.

Digital Prospectus

Teachers at Knowle Park Primary school aim to make children aware of opportunities beyond what they would experience in their everyday lives. Joe and Andy Dewey (Deputy Head and Year 5 teacher) wanted to apply this ethos to exploring the opportunities digital technology present to pupils. They also wished to support students to develop the digital literacy skills that would enable them to make effective use of those opportunities and understand the corresponding challenges.

The school's management team had already decided they wanted a digital prospectus for the school which would be made available online and in DVD format for prospective parents and students of the school. They decided that it would be in keeping with their values around student participation in school life for students to create the prospectus.

Students from Years 5 and 6 would work across the year groups to create the video footage for the digital prospectus. As ICT in the school was traditionally only used in the ICT suite, the teachers were particularly keen to develop this opportunity to support children working collaboratively and using ICT around the school.

They wanted to create a project in which children were meaningfully participating and taking responsibility for a project that not only had a real audience but also real outcomes for the school.

Each group of five or six children (of mixed age and ability) was assigned a particular section of the prospectus which became their responsibility.

Joe and Andy worked with each group to carefully to support them in planning, creating and editing a film that contained the information they had all agreed would be essential for a prospective student and parent of the school to know.

Contents

Introduction

As the school only had one video camera, groups of students had to take it turns to film. Whilst waiting to film, the children had the task of exploring potential places to film around the school and weighing up the advantages and disadvantages of filming there. The teachers supported them to think critically about their audience by considering what content would be relevant and appropriate for a film that was going to be made publicly available. They also decided what kind of film they were going to make; some children chose to act out scenes for which they wrote scripts, others chose a documentary style.

One of the teachers always worked closely with the group whose turn it was to film and used carefully phrased questions to prompt students to think about issues such as considering the background for their filming and whether the audience had enough prior knowledge to understand the content. The students were also supported to collaborate and to develop the functional skills required to use the camera.

At the end of the each session, the students who had been filming shared what they had learnt about the process with the others.

Successes and next steps

The students were delighted to be given the opportunity to promote their school. They worked hard to come up with a very clear view of how they wanted their prospectus to be and were clear about its purpose. They wanted it to be entertaining and informative, and they wanted to make people come to their school by showing them their positive experiences.

Most children showed a critical awareness of their audience:

"We're not just saying random things like blah blah blah, we're thinking hard about which places to film, what people should see, we're planning it."
Year 6 student

They also indicated they were developing their collaboration skills:

"Working as a team can be hard, we try to listen to each others' ideas and, then like, combine them."
Year 5 student

Students learnt the functional skills of operating the camera as well as some film-making skills such as how to minimise background noise and how to communicate the filming process to each other.

In one incident, in order to communicate part of the filming process to their peers, students spontaneously used hand signals to countdown to the start of filming, and called "action!" as filming began. As a result of this, their teacher started an interesting conversation with them about where those ideas had come from, where they had seen people doing that before. Through discussion, he supported them to realise that they were drawing on their existing knowledge of film culture.

Filming for the prospectus is still ongoing. Once the filming is complete, the teachers plan to support students in editing their video footage using free, downloadable video editing software.

Through this, teachers can build on the children's developing understanding and critical thinking around the needs of an audience. During this continuation of work, students will need to develop different skills of collaboration such as supporting each other to learn the functional skills required, as well as making group decisions about how to edit the film.

In future classroom teaching, this work could be built on to continue developing children's digital literacy skills using different technologies and perhaps allowing the young people a choice of digital media with which to create outputs.

The Dangers of Volcanoes

What would it be like to be near an erupting volcano? How a group of Year 7 students used digital media to discover and present new geographical knowledge.

Case Study 05/10   Futurelab

The Dangers of Volcanoes

Key Stage 03
Geography

Ryan Lewin, a geography teacher at Brislington Enterprise College, an 11–18 school in south Bristol, felt it was important to ensure that he was beginning to use the new-build school's extensive ICT provision to go beyond motivating and engaging pupils.

He aimed to develop his Year 7s' digital literacy skills through a week-long themed enquiry topic with a digital output to communicate learning. With a number of digital technologies available to his students, Ryan wanted to support his students to make discerning choices about their communication platform, to think about the context and audience, and discuss the possibilities offered by particular technologies as well as their limitations.

The Year 7s were set a task of working collaboratively to research and communicate, through a digital media of their choice, information that would help their peers to understand the dangers of volcanoes and why people continue to live near them.

Following some 'scene setting' activities in which Ryan used YouTube to show volcanoes erupting, students were asked to write or draw a representation of what it would be like to be near an erupting volcano.

Ryan then asked students to get into groups of three or four others with whom they would work well. He then asked them to plan their project, which he supported by providing the following prompt questions:
– What is your task?
– What do you need to find out?
– What is your audience?
– How do they like to learn?
– What resources do you want to use? Why?

Digital Literacy
in Practice

The Dangers of
Volcanoes

Key Stage 03
Geography

Before the students began their collaborative internet research, Ryan initiated a class discussion about how to find and evaluate relevant information on the web by using a spoof blog as a talking point. If the students came across such a blog on the internet how would they know the information was reliable? They discussed verifying information by visiting other more well known sites and comparing information from different sources.

Ryan also gave the students a number of websites he recommended and supported them to plan their research by considering the following questions:
– What are you going
  to look for?
– Where are you going
  to find it out?
– Why do you think this is
  the best place to look?
– How are you going to use
  the information that you find?
– How will you know you
  can trust it?

They had a series of lessons over a week to collaboratively research their topic and produce their outputs which they would show to each other. Each group of students was given one school laptop and one mini laptop, both with internet access. They also had use of digital stills and video cameras.

Students' choices of output were wide and varied; some groups created blogs, some made PowerPoint presentations, some created models of erupting volcanoes which they then filmed and one group created a spoof documentary-style video.

In the final lesson, after students had presented their work to the rest of the class, Ryan encouraged them, through class discussion and written tasks, to reflect on the quality of their research, the effectiveness of their communication and what they had learnt about volcanoes.

**The Dangers of
Volcanoes**

Contents

Introduction

Primary School
Case Studies

Secondary School
Case Studies

Conclusions

Appendix

Successes and next steps

The students enjoyed the creative aspect of the activities, reporting that "it was probably the best project we've done."

They also worked well together and reflected on the process of collaboration students reporting that in some respects, this success was due to assigning roles to each person in the group.

"We all had different jobs to do and so we all had to get our job done to get it all sorted."
Year 7 boy

It was challenging to find a way for students who had not chosen to use PowerPoint to represent their work to the rest of the class. Students attempted to give presentations even when they had created blogs. This reflects a common issue in classrooms, where the focus is often on students standing at the front of the classroom presenting their learning, rather than on whether information was communicated effectively in the chosen media.

As students are supported to further develop their digital literacy they need to consider modes of presentation and the needs of the audiences they are trying to reach eg a blog is designed to reach a very different audience than that of a PowerPoint presentation.

Audience awareness is also key to supporting students to develop effective research skills. Although students in this project were supported to think carefully about their use of PowerPoint, there were still some incidences of information being copied and pasted from the internet onto the presentation slides. Providing a real context and audience for their work can support students to re-contextualise information so that their audience can access it. Considering their own needs as an audience for a piece of work can also support them in thinking about the needs of others.

Evaluating and reflecting on audience needs, reliability of information, and suitability of digital technology for the task in hand can be an ongoing process throughout a piece of work. Evaluation that happens at the end of a lesson is useful to support the next piece of work, but students can also be supported to discuss, debate and critically reflect on their work throughout.

Contents

Visualising Plans and Elevations

Representing objects in multiple formats and taking maths lessons to another dimension with online 3D modelling.

Contents

Introduction

Primary School
Case Studies

Conclusions

Appendix

Visualising Plans and Elevations

Key Stage 03
Maths
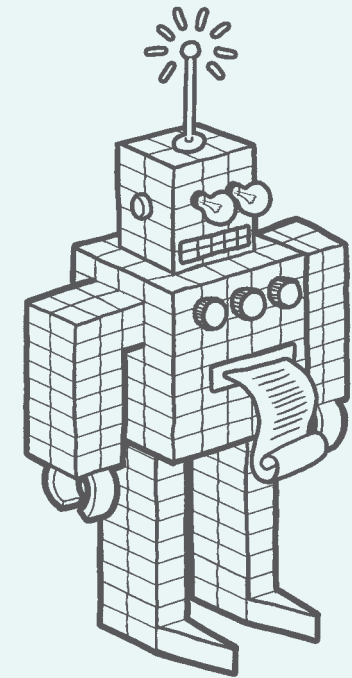
Bridget Chickonobaya, a maths teacher at Brislington Enterprise College, wanted to support her Year 7 students to visualise plans and elevations whilst also developing their digital literacy.
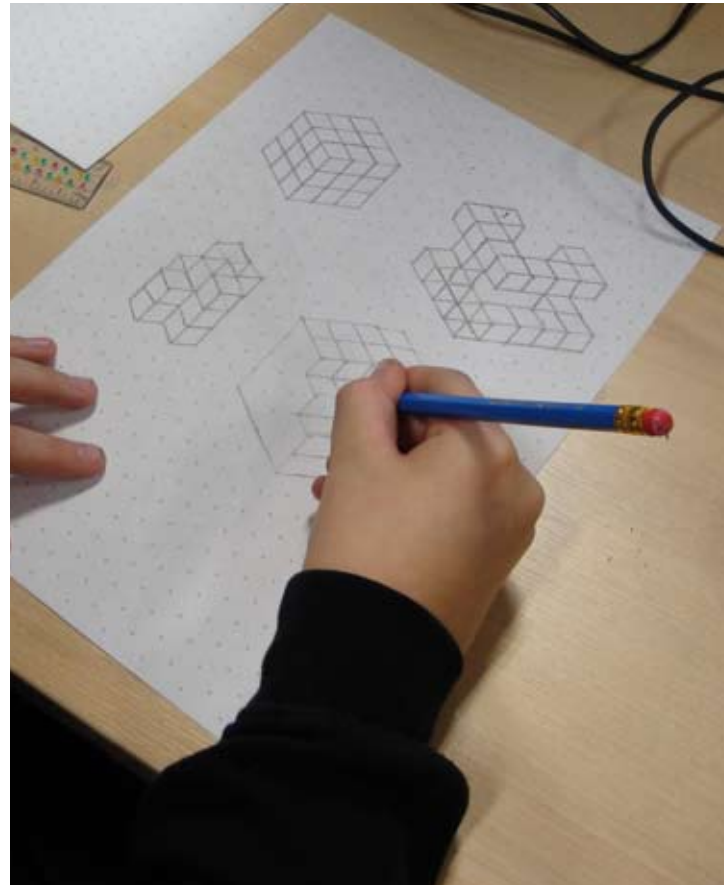
She planned to help students understand this topic by relating it to their own context of being located in a new-build school and asking them to consider why both printed plans or elevations and 3D computer models would have been useful when the school was being designed.

At the beginning of the scheme of work students were asked to carry out independent research for homework in order to find out what 'plans' and 'elevations' were, and to locate some examples. The teacher did not specify where students should look for this information as she wanted students to think about what the best sources of information might be for this particular purpose. Most students chose to use the internet and the teacher initiated some discussion about how they had found the information and how they knew it was reliable and relevant.

The teacher introduced the topic by demonstrating a model of a house on the interactive whiteboard and asking students to complete a related task on www.mymaths.co.uk. Students then used a specific website which allowed them to use blocks to create any 3D object they wanted. (www.fi.uu.nl/wisweb/isdeee/applets/Blookkendos.htm). The students were given time to play around with the website and become familiar with it before being asked to use their 3D onscreen creations to help them visualise what the object would look like in both plan and elevation form on isometric paper.

"You can build anything you want and then just draw it... I did a Mickey Mouse."
Year 7 boy

"It's really good for them to visualise and for them to explore building their own things, not the things I want them to make."
Year 7 teacher

Visualising Plans
and Elevations

Key Stage 03
Maths

Students were encouraged to work together to help each other when they encountered problems, but they also undertook a personal online assessment to evaluate how much they had learnt at the end of the lesson.

"Can we draw it like this? Shall we draw it together?"
Year 7 boy

The teacher moved around the class reminding students of the purpose of what they were creating. The students were supported to realise that the technology afforded them the ability to create complex objects and whilst this could be very useful, they may need to simplify these objects when drawing 2D representations; technology could help them with their task but it also presented some challenges.

The teacher planned to move on to relate this work to the printed plans of the school which had been used when the school was being built, and to ask students to use Google SketchUp to re-create parts of the school. This would allow her to further discuss the contribution that both technology and mathematical understanding can make in enabling people to visualise objects in different modes, see objects from different perspectives and relate this to real-life experiences and professions.

Finally, she planned to ask students to collaborate to create a presentation to communicate what 3D solids look like in plan and elevation form and how this is used in real-life for building houses and schools. Presentations will be aimed at an audience of people who know nothing about the subject, and there will be some classroom discussion about what good communication looks like in the context of this particular audience.
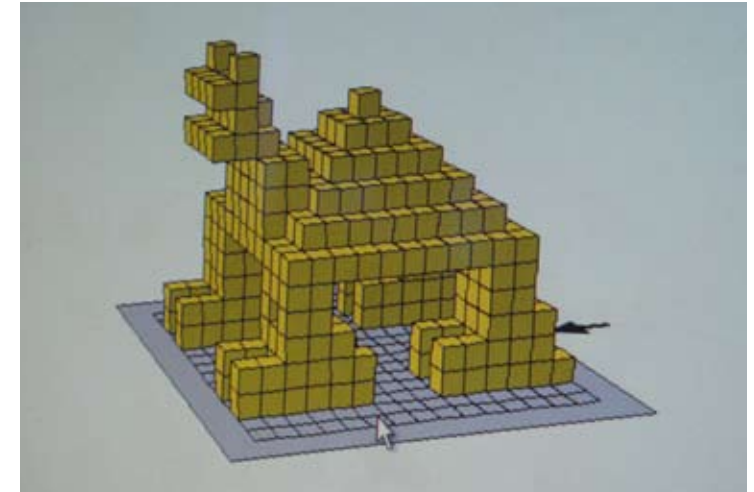
Digital Literacy
in Practice

Visualising Plans
and Elevations

Key Stage 03
Maths

Successes and next steps

The internet was used to stimulate learning about maths. The website helped students to create, manipulate and visualise 3D objects and solids. The teacher felt that it was "the best tool we're using... it's really exciting." As the children's digital literacy develops, they could be supported to find other web-based tools which could support these processes and to compare and contrast the benefits of different tools.

Students used technology to explore and communicate the application of subject knowledge to real life. This was linked to the children's own context in terms of the re-design of their school and provided an opportunity to think about communication and representation in different modes. Students needed to step back from their immediate assumption that a 3D model would always be the most useful and think critically about different forms of representation and how technology could support this.

Students reported enjoying the work and felt that using computers and the internet helped them to learn.

"In here it helps you learn because it's just better on the computers than having to, like, write it all down and copy it from the board, you can do it for yourself... you learn more because you're enjoying it."
Year 7 student

The students encountered some problems whilst using the technology and were supported to overcome these problems, as well as being allowed to help each other with them (eg not being able to find the website, the computer freezing, learning how to use the website and how to manipulate the objects on the screen).

As the teacher further develops these types of activities, she could support students to use and analyse a wider range of technologies and to think about communicating their work in different formats. The way the room was arranged (computers on individual tables) made it difficult for effective group working and if the teacher repeated the activity she would plan to put more emphasis on the skills of collaboration, including discussion of how plans and elevations themselves support team work, for example, in the building profession.

Our Fractured Earth

Students' creative use
of technology to express
their interpretation of the
beauty and the terror of
our fractured Earth.

Contents

Introduction

Primary School
Case Studies

Secondary School
Case Studies

Conclusions

Appendix

Our Fractured Earth

Key Stage 03
Geography

Ben Cotton, a geography teacher from St Katherine's School, an 11–19 school in North Somerset, undertook a project with his Year 9 students in which they created an artefact to reflect and communicate the 'beauty and the terror of our fractured Earth.' He sought to encourage independent learning and develop digital literacy by giving students responsibility for managing the process and choosing from a range of technologies in order to effectively support their work.

The brief was deliberately very open in order to encourage creativity in the use of the digital resources.

The project objectives were:
– To work collaboratively
– To explore, analyse and evaluate digital technology
– To reflect on learning
– To communicate effectively

The project began with some class discussion about the word 'fractured' during which students began to connect this with the work they had previously been doing around natural disasters, including earthquakes and volcanoes.

Students worked in groups and assigned roles to each member of the team. They were asked to come up with a plan for their project, including defining what information they needed to research and what digital tools they were going to use throughout the project.

They completed internet and book research to gather the resources they needed to create their final piece.

Each lesson ended with a 20 minute session in which students made video learning diaries by asking each other questions such as 'What has worked well today?' 'What could we do differently next time?' The teacher supported this process by asking the class additional questions such as:

"If you've used the internet at all you need to start thinking about how you've used the internet and how you could use it better in the future. Which websites have you used and why did you use them?
Year 9 teacher

Students were provided with a PC, digital cameras and a video camera as well as arts materials and were allowed to bring in technology from home if they got a permission slip from their parents. They were also encouraged to use any digital technology they might have in their pocket (mobile phones etc) to support them in creating their final piece, to communicate what they had learnt about 'our beautiful and fractured Earth.'

Contents

Introduction

Primary School
Case Studies

Secondary School
Case Studies

Conclusions

Appendix

Our Fractured Earth

One group, who called themselves 'World Creative Association' or WCA, chose to apply their existing out-of-school interests to a classroom situation by creating a Lego stop-motion animation representing what it might be like to be in an earthquake. Some groups made models of volcanoes erupting which they then filmed, and others produced short films to music using superimposed text to provide key information about earthquakes.

When one group was asked why they had chosen a particular medium over others, they responded:

"We thought that it's an easier way to get a message across because if you have lots of writing then you're gonna be like 'oh look it's writing I don't really care.' But if it's on a video, you're probably gonna remember it... So you've got something that sticks in your head."
Year 9 student

Students were supported to engage in critical thinking both about the relevance of particular information and how to convey their subject knowledge, as well as around the advantages and disadvantages of particular technologies and how they had used them. The teacher supported students to reflect critically on their own learning processes by discussing the way in which the footballer David Beckham improved as a footballer.

"Practice... And then what? Do you know what he used to do? Did he just do a few free kicks and just go 'right that's it?'... He used to, you know, use stats, figures, how many good kicks, how many bad ones, look at his technique, analyse it, try and evaluate himself and try to improve for next time. I think that's what you need to start doing."
Geography teacher

Our Fractured Earth

Contents

Introduction

Primary School
Case Studies

Secondary School
Case Studies

Conclusions

Appendix

Successes and next steps

The project involved a strong emphasis on collaboration and creativity. Students reported enjoying the project as well as being able to make connections between different aspects of what they had learnt.

"It's been good learning how to use new technology you might not have used before and all sorts of stuff. It's been really good... I really enjoyed the geography thing as well... so learning about volcanoes and then it's just like putting it all together. And just getting to do this project. We basically just get to do, kind of, anything as long as it's to do with fractured Earth which is really good."
Year 9 girl.

The teacher was disappointed that there was not more of a wide variety of technologies used.

"There's a lot of 'oh they're doing that so we're gonna do that as well.' So that's probably one of my disappointments. I wanted them to do blogs and stuff. But they didn't choose to do that."
Geography teacher

The teacher could perhaps address this by giving the students a more defined structure in follow-up activities and asking them to use specific technologies to communicate their subject knowledge to defined audiences. They could then consider the advantages and disadvantages of different technologies for this purpose.

Contents

Introduction

Primary School
Case Studies

Secondary School
Case Studies

Conclusions

Appendix

Rites of Passage

Bar Mitzvas, weddings and funerals: How a group of Year 9 students used digital media to create a teaching and learning resource about the stages of life.

Contents

Rites of Passage

Key Stage 03
Religious Education

Emma Teasdale, a religious education teacher at Ashton Park School in Bristol, was working with a Year 9 RE class on a unit on rites of passage. She has found that students traditionally find it difficult to access this material.

"The subject we're looking at and the reason why people go through these rites of passage is quite alien to them."
RE teacher

She therefore wanted to use technology to help students engage with the topic by asking them to choose between different media to create a number of communication pieces about different rites of passage. She then planned to use these as teaching resources for future classes.

"So I'll be saying 'through your learning, you're going to be helping other students with their learning'… So what I'd be looking for is for them to actually create resources… And I need them to be useable. And that means it's purposeful, it gives them a goal, it's for real people."
RE teacher

This unit of work took place during nine lessons over the course of a half term. It began with a lesson in which students were introduced to a number of different media (eg blogs, videos, Wikis and podcasts). Students were then given the opportunity to work in groups to play around with different types of hardware and software, and use them to create a short output of their choice about a subject that interested them. One group of girls decided to create a blog discussing their thoughts on whether society stereotypes children. Another group planned to make a short documentary about homelessness.

Rites of Passage

Key Stage 03
Religious Education

This provided students with the opportunity to bring their existing interests into the classroom and gave them time to think about the advantages and disadvantages of different media. This served as preparation for deciding how to use technology to communicate with their peers about a particular topic from within the RE curriculum.

Students then worked in groups to research an assigned rite of passage. They used both internet and book research and used email to pass information to each other within their groups. At the beginning of this lesson, students were given tips on internet research and there was some class discussion about how to find reliable and relevant information.

"Maybe search two different websites and see if they say the same thing... But you have to be careful because some websites might be getting information from the first website you found – so both might be wrong."
Year 9 girl

The purpose of the research was to find material for a PowerPoint presentation to teach the rest of the class about particular rites of passage, including the cultural reasons for people's engagement in them. This meant that students needed to critically engage with the information they were finding in order to re-contextualise it and make it relevant for a particular defined audience. During these presentations, the audience of classmates were asked to fill in a worksheet with a series of questions about the topic they were hearing about.

"It's been fun and we've learnt stuff because, like, we filled out all those sheets and we could fill them in from the stuff we'd done."
Year 9 girl

The final part of the project involved students choosing a rite of passage and selecting any suitable form of digital media to create an output in a format of their choice that could be used as a communication and teaching resource for the next cohort of students.

Some students created videos about marriage or Bar and Bat Mitzva while others created PowerPoint presentations, but students were supported to think critically about their choice. One student defended her group's choice of making a PowerPoint presentation by criticising the affordances provided by a blog.

"last time we did a blog... But the problem is you haven't got as much, like, choice about how it looks and it's all set formats..."
Year 9 girl

Throughout the project students were asked to write short notes to update their teacher and the rest of the class about what they had been doing. They also uploaded all their work onto a shared online space for the class, which was created using www.drop.io. This meant that all work was visible and could be commented on by peers. The teacher reminded them that everything they put on this space could be seen by her and that they needed to use it appropriately.

Rites of Passage

Successes and next steps

The teacher felt that giving students the opportunity to create something in order to communicate subject knowledge to a defined audience gave the project "real meaning" because it made it relevant and purposeful. She was also able to allow students to engage in independent learning whilst also engaging in more formal direction when required. Students enjoyed the unit of work and reported learning new content related to their subject and the project created a bank of resources for future students to learn from. As a result of being involved in the project, the teacher is now advising on how digital literacy might be taught across the curriculum at her school.

There was a perception amongst the students that they already knew how to make a PowerPoint presentation and sometimes students therefore chose this as an easy option.

The teacher needed to intervene several times to help students to repurpose information rather than copying and pasting material they had found on the internet. Whilst the teacher was pleased with the variety of technology used, she would also have liked to see more students experiment with other formats but time and resources prevented this.

Some students found it hard to work in groups when they were using laptops. Students who weren't using laptops tended to be sitting doing nothing and needed support to realise that they could still contribute to the task even if they didn't have control of the mouse or keyboard. Although they had assigned themselves roles, they didn't always stick to these roles. As they develop their digital literacy skills, they could be supported to learn more about how to collaborate successfully using a range of digital technologies.

Case Study 08 / 10

Futurelab

Newspaper Project

Delivering the news:
Considering the differences
between delivering the news
in print, on film and online
and collaborating to create
a newspaper.

Case Study **09**/10   Futurelab

Contents

Introduction

Primary School
Case Studies

Secondary School
Case Studies

Conclusions

Appendix

Newspaper Project

Carolyn Twist, an English and media teacher at Ashton Park School in Bristol, was working with a group of Year 9 students on a newspaper project which aimed to develop students' writing for different purposes and give them an understanding of the journalism profession, whilst at the same time fostering their digital literacy.

The students worked in groups of approximately three to five of their own choosing to produce a newspaper. Students were expected to allocate tasks within their groups and were supported to think about how to collaborate effectively and to communicate as a group in order to deliver a final product.

"In your groups you need to decide who is going to write the problem page, who is going to write the sports page, who is going to write the letters to the editor."
Year 9 teacher

The first three weeks of the scheme of work focused on developing knowledge and understanding of newspaper writing and involved activities on how newspapers communicate information. This included consideration of audience, different kinds of newspapers and how, for example, text, photos and cartoons can be used differently to represent meaning. Students then worked on creating their own newspapers using PCs and software of their choice (this was usually Microsoft Word or Microsoft Publisher).

Students followed their own interests in terms of the content of their articles and were asked to find supporting information and illustrations on the internet. One group created a games page and a 'funnies' page in addition to the articles that the teacher had asked for. Groups collated all of their information electronically on a shared space on the school's network.

The teacher aimed to support students to evaluate both the material they found on the internet and their own written work as they drafted and redrafted their articles. She moved around the groups giving them suggestions for ways they could improve their work and checking that they had planned their next steps.

Contents

Introduction

Primary School
Case Studies

Secondary School
Case Studies

Conclusions

Appendix

Newspaper Project

Students also researched online newspapers and were asked to think critically about how they differ from their print equivalent. They were given a range of examples of newspaper websites to compare with each other and with print newspapers. They worked in pairs to answer a number of questions evaluating which aspects they preferred, what worked best for different purposes, and why that was the case. This meant that they needed to think about reading and writing in different formats and the affordances that different types of technology, including the printing press, offered for communicating meaning.

They were also encouraged to reflect on the appropriateness of alternative media for the news stories they themselves were creating.

Students then selected an appropriate article that could be used for a filmed bulletin. They chose a story, scripted a broadcast and filmed each other. Students were given strict instructions and deadlines to try to recreate the conditions that would exist in a newsroom as the teacher felt that this would make the topic more real. Some of the sources for this section of the scheme of work came from BBC News Schools Report (news.bbc.co.uk/1/hi/ school_report/default.stm).

Newspaper Project

Key Stage 03
English

Successes and next steps

Students were able to define the content of their stories and articles and use their existing interests to learn about writing for a newspaper as well as creating filmed broadcasts. They created detailed and extensive newspapers and reported enjoying the task.

Students were supported to think about communication and representation in different modes and formats (visual, textual, video etc) and how technology could support this. If there had been time, this could have been extended to a consideration of how audio formats, such as radio and podcasts, may or may not change the way in which meaning is communicated as well as to a consideration of how the growth in blogging and micro-blogging, for example, has affected the media landscape.

Students used computers, the internet and video cameras to create their own media and were asked to think about where they filmed their broadcast and what they wanted to have in shot.

There were some occasions when the teacher filmed the broadcasts rather than allowing the students to use the camera. This was due to the need to ensure that filming was completed efficiently as the time for the unit of work was running out. As the students continue to develop their digital literacy skills, they can be supported to learn how to effectively manage their time when working in groups to use technology.

As the teacher develops these kinds of activities, she could further emphasise the cultural, social and historical aspect of what students were doing. Students needed to make use of their social awareness and cultural understanding in order to successfully create articles, although this wasn't made explicit during the activities. The teacher could support students' engagement with critical concepts in thinking about, for example, the history and politics of the press, the globalisation of news corporations or citizen journalism in relation to online and printed media.

Why is DNA the Molecule of Life?

How a group of Year 11 students used digital media to communicate the complexities of DNA to their peers and evaluated the effectiveness of different modes of presentation.

Case Study 10/10
Futurelab

Contents

Introduction

Primary School
Case Studies

Secondary School
Case Studies

Conclusions

Appendix

Why is DNA the
Molecule of Life?

Key Stage 04
Science

Paul Hill is a science teacher and Head of E-learning at St. Mary Redcliffe and Temple School, an inner city, 11–18 mixed comprehensive, Church of England Voluntary Aided Secondary School in Bristol. The curriculum at the school is underpinned by the school's own set of 15 competencies and values. Paul wanted to integrate digital literacy into his Year 11 science subject teaching and saw this as an excellent opportunity to support the whole school focus on developing good communication skills.

"Schools have always tried to develop communication skills, but today that's not just about speaking confidently, having a good public speaking voice, now people use digital media as visual aids. The first generation of that was a PowerPoint with bullet points, but now decent communication skills include using visual images and multimedia effectively. Who's going to teach them to do that if we don't?"
Year 11 teacher

He also expressed concern over students being 'spoon fed' subject content. He was keen to free them up from seeing the teacher as the 'fountain of all knowledge', but at the same time wanted to ensure their active involvement with digital media for learning. This included supporting them in understanding how to access information and critically evaluate its relevance and veracity.

"I don't buy the digital natives argument, a lot of them are quite perplexed by the amount of stuff on the web, actually they have a pretty poor understanding of the reliability of sources, how to assess it and how to reference it."
Year 11 teacher

He was keen to support his students to use digital technologies in an effective way and to make considered and valuable choices when using it. Specifically he was aiming to develop their critical thinking around the right digital tool for the task and the affordances and challenges offered by different technologies.

Paul gave his Year 11 students the task of working collaboratively to answer the question 'Why is DNA the molecule of life?' by researching DNA and then re-contextualising the information they found in order to create a presentation to their peers. Their presentation would then potentially be put online and used as revision materials for other students.

**Why is DNA the
Molecule of Life?**

Key Stage 04
Science

The students were told that skills of good communication were a key focus so they would be evaluating each others' work based on their presentation skills, the relevance of the content of their presentation, and the suitability of the digital tool they had chosen for the task.

Paul had taught some of his previous lessons modelling the digital technologies students could choose from: podcasts, PowerPoint presentations and videos. Paul and his students discussed and critically evaluated which digital technology tool they thought had been used most effectively to communicate the information, and which supported their learning the best.

Students were set a challenge. They could choose to use PowerPoint as a communication tool only if they avoided using bullet points, kept text to a minimum, chose images that clearly supported what they were going to say in their presentation and included one animation/ moving image. The students agreed this was "not the usual sort of PowerPoint" and were encouraged to think about their communication skills and how to deliver more interesting presentations.

"We're deciding what we want to say and then choosing the images that go best with what we're saying."
Year 11 student

Why is DNA the Molecule of Life?

Key Stage 04
Science

Successes and next steps

The students enjoyed the experience of being able to bring their creativity into their science lessons.

"It's good, it's different. This is more creative than our usual science lessons."
Year 11 student

Throughout the piece of work they developed their awareness of how their work would be perceived by their audience.

"We're thinking about others whilst we're making it, we want to make it understandable for everyone."
Year 11 student

In doing this, they were having to consider which key facts to include and were re-contextualising the information they had found through research into new formats and more accessible language. Several students commented that this was helping them learn.

"We're only putting the important stuff into the video, we've got to learn it more so we know what to put in."
Year 11 student

"We're finding out things we didn't know before, making the presentation helps you to remember it."
Year 11 student

The students also showed evidence of having critically evaluated the different types of digital technology on offer to them. They had clear reasons for why they chose to work with a certain technology and why they liked others' use of those technologies. Their reasons were focused on communication of information in order to support them and others to learn.

"With a podcast you could listen to it over and over again to help you revise."
Year 11 student

"It's hard to put a picture into words in a podcast. Looking at a picture is easier for some parts of this learning."
Year 11 student

"A video isn't boring, it keeps you engaged, you listen more."
Year 11 student

"Looking at a picture and being talked to about it makes it easy to take stuff in."
Year 11 student

In order to further develop their digital literacy skills students could be supported to examine the social and cultural contexts in which they are operating. Students who created videos and podcasts were using conventions and ideas that they had learnt through their engagement with those media in their lives both inside and outside school. At the same time they were creating science content, and the subject discipline itself is imbued with social and cultural references. Future activities could aim to make this more explicit.

Contents

Introduction

Primary School
Case Studies

Secondary School
Case Studies

Conclusions

Appendix

Concluding discussion:
teacher and student experiences of the project

These case studies represent teachers' first steps in developing students' digital literacy in their classroom. Although each individual teacher experienced the project in their own way, there were some universal challenges and successes which may be helpful for teachers to consider when seeking to design their own approaches to developing digital literacy in subject teaching.

On a general level, all teachers reported enjoying being part of the project, which they saw as an important step in developing their own and others' understanding of digital literacy. All teachers also reported high levels of motivation in their students who enjoyed the activities and opportunities to explore new ways of learning.

In this concluding section of the document the experiences of teachers and students on the project are brought together and discussed in relation to exploring the meaning of digital literacy, fostering digital literacy in the classroom, and teacher roles.
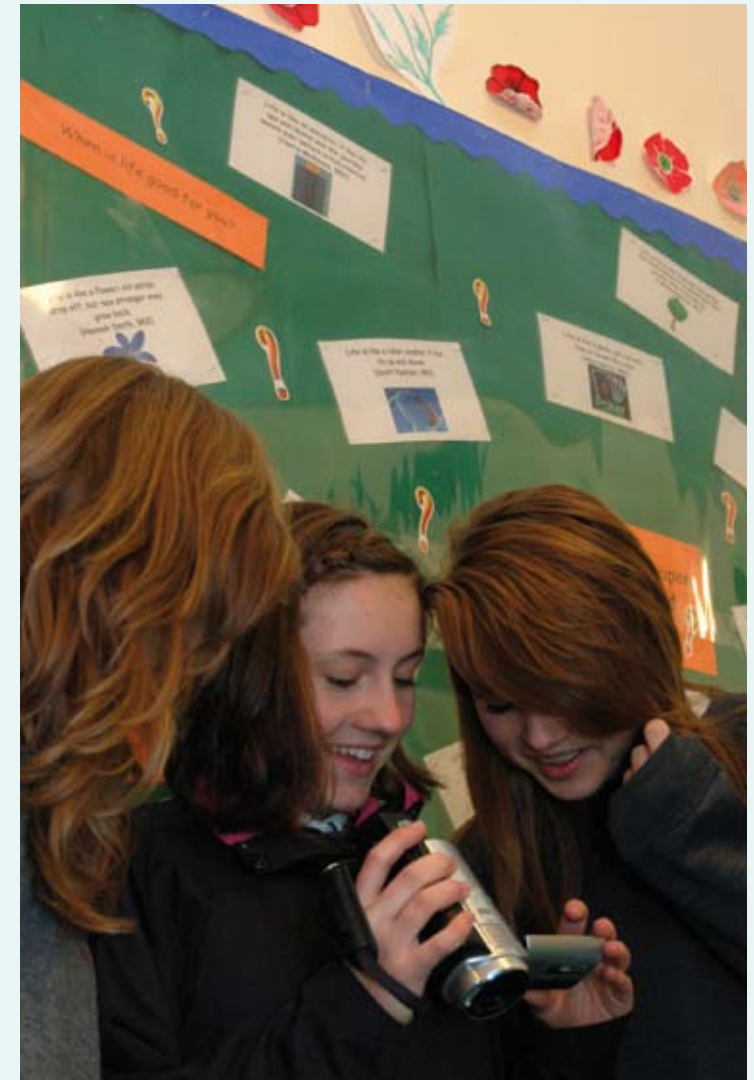
Exploring the meaning of digital literacy

Despite having heard the term digital literacy before, most of the teachers were unsure at the start of the project what the concept meant for them, their students and their teaching. The teachers attended two participatory workshops in which they worked alongside researchers to explore the concept and to come up with a mutual understanding of digital literacy.

All the practitioners instinctively found ways to relate digital literacy to their own professional values and their aspirations for their pupils:

"As a teaching professional, I have a responsibility to ensure my students are not just digitally confident but digitally competent and literate."
Secondary geography and AST teacher.

In addition, teachers found it helpful to link digital literacy concepts to their existing responsibilities, which helped them consider where and how digital literacy would fit in their day-to-day reality of classroom teaching. Often, links were made between their school's values and/or other whole school initiatives and curriculum requirements such as, in secondary schools, Personal Learning and Thinking Skills.

Experiences of fostering digital literacy in the classroom

There were some similarities in the ways in which all the teachers, both primary and secondary, approached digital literacy in their classroom teaching. There were also similarities in the challenges they faced and the successful strategies they used to support their students.

At the start of the Digital Participation project, many of the teachers had some concerns that their own confidence in using technology, the reliability of technology and the lack of resources in their school might be potential barriers to the success of their activities.

As the project progressed, it became clear that these initial concerns around resources were not going to negatively impact upon the project. Several teachers made use of web-based tools which are freely available on the internet and which they were able to arrange to have unblocked on the school computers or laptops.

In some cases students were given permission to use their own mobile phones, in others teachers and students simply made creative use of the resources available in the school. There were few problems with unreliable technology and where there were any issues these were used as learning experiences for the students.

When technologies that were more familiar to students than their teachers were used, this did not significantly impact on teachers' confidence. The activities had been designed in such a way that teachers needed to use their existing expertise to support students to apply their subject knowledge, critical thinking and creativity to the use of technology.

All the teachers undertook activities which saw students working together in groups. Where this was most successful, the skills of effective collaboration were made explicit and discussed in the classroom. In some case studies, the students were either given group roles by their teacher or asked to assign themselves roles. This worked well and supported students to talk about how well they were collaborating.

Prior to planning the activities, many of the teachers expressed concern over their students' internet research skills. The ability to find and select information was therefore a component of digital literacy that many of them chose to include in their activities. In classrooms where this was done particularly well, teachers supported students in their research by coming up with specific questions they wanted students to answer. This helped students to narrow down their research and they were consequently less overwhelmed and more focused.

Experiences of fostering digital literacy in the classroom

Some teachers had conversations with students about how to question the reliability of information they found on the internet, although this was an area in which teachers seemed less confident. This suggests that more support may be needed for teachers in this area.

Prior to the activities, many of the teachers expressed concern over their students' internet research skills.

Creating an output which required communicating content to a real audience played a significant role in a number of the projects. Considering their audience's needs helped to focus students throughout their activities. When students were researching for information and deciding the content of their output, focusing on what the audience needed to know helped them to engage with the subject related information they were researching and re-contextualise it to suit that audience.

Teachers who built in regular opportunities for reflection and critical discussion in class had more success in supporting students to evaluate their work. In classrooms where evaluation happened only at the end of the activity, students found it harder to be reflective and think critically. Ensuring that evaluation happens all the way through a project supports students to regularly reflect on their work as it progresses. For example, students can consider whether they are using the most appropriate technology for communicating their ideas, whether they are still considering their audience, how well they are collaborating and if any changes need to be made.

Critical thinking and ongoing evaluation were most apparent in classes in which teachers worked hard to create and make time for an atmosphere of debate and discussion. For teachers and students who have become accustomed to learning in classrooms where the imperative to complete an output in a given time has been paramount, slowing the pace and allowing time for critical thought can be difficult at first. Some teachers managed this by designating time for reflection in each lesson.

Experiences of fostering digital literacy in the classroom

Most teachers developed activities that aimed to foster just three or four components of digital literacy, with the understanding that in future teaching they would foster some of the other elements, as well as continuing to work with their students on developing digital literacy as a whole.

Across the board, some components of digital literacy were more commonly focused on than others. This was partly due to some components being seen as a more obvious starting point and as more overtly recognisable and tangible and therefore teachers feeling that it was easier to plan activities to foster them.

Creativity, collaboration and communication, for example, are more easily directly translated by teachers into classroom activities than cultural and social understanding. Teachers can more easily picture what students might be doing or making when considering creativity, collaboration and communication than they can when considering fostering cultural and social understanding.

Yet, in fact, components such as cultural and social understanding and critical thinking underpinned many of the activities that took place in schools. Whenever students create a digital artefact or effectively communicate with an audience, for example, they will be implicitly making use of and developing their critical thinking and cultural understandings. The task of digital literacy teaching is to make this more explicit so that students begin to recognise the importance of these elements and further develop their understanding of them and the complexity and sophistication of their thinking in these areas.

This points to a need for support for teachers to plan for all components of digital literacy to be fostered across their teaching, although not necessarily all through the same piece of work. It is hoped that the accompanying handbook to these case studies will provide some guidance for this purpose.

Whenever students create a digital artefact they will be implicitly making use of and developing their critical thinking and cultural understandings.

Contents

Introduction

Primary School
Case Studies

Secondary School
Case Studies

Conclusions

Appendix

Teacher roles

Teachers involved in the project found that in developing digital literacy within classroom teaching students became more independent in their learning.

Although there was direct teaching involved in the activities, there were also aspects of the students' learning that were less directed and controlled.

Students were allowed more freedom during the process of creating the outputs of their learning and in the ways in which they chose to communicate their learning. Teachers found they needed to be more flexible and less in direct control of the time and space in the classroom.

Often the teachers set out the amount of time available for a task and supported students to work within that time frame, with different groups of student progressing at different paces. In some activities, students were given a choice of what technology to use so different groups of students were engaged in different sorts of tasks with different outputs. Students were also often collaborating and so the organisation of classroom space was changed in order to allow students to work in groups. In addition, in many of the activities students were allowed to move about the spaces available, this often included space outside the classroom.

The teachers spoke of a need for building good relationships in the classroom for providing enough structure and guidance to support students to work independently.

"It's a different relationship, you need to build trust with them and give them more freedom. But it is through that new relationship that you begin to realise what they're really capable of."
Primary school teacher

Teachers found that this was a new role for them and one in which, as well as directly teaching students, they were also guiding and facilitating them in their learning. Far from this being a passive role, teachers found they needed to be responsive to the students, asking them questions and prompting them to go beyond the boundaries of their current understandings.

Conclusion

The main aim of the Digital Participation project was for researchers to work alongside teachers to begin to gain a better understanding of how digital literacy might be fostered within curriculum teaching, and to provide examples of emerging practice that would support other teachers.

The practitioners involved in the project had varying levels of skills and confidence around digital technologies and some had access to more resources in their schools than others. It was important for the project that teachers worked with both the opportunities and the constraints found in their everyday classroom settings.

In these case studies teachers have shown that it is possible for any teacher to begin to develop students' digital literacy alongside subject knowledge in classroom teaching.

At a time when the National Curriculum has become less prescriptive and aims to give schools more flexibility, practitioners potentially have more opportunities to explore new ways of learning in the classroom that respond to the needs of their students. Digital literacy can both support and be supported by these aims and opportunities.

Becta digital literacy planning tool

Digital literacy planning tool

Incorporating digital literacy into everyday teaching

This tool will help you incorporate digital literacy into your teaching – for any subject, at any level. You can use it as a planning tool for everything from a small problem-solving task to a larger project.

There are five key aspects:

1. **DEFINING**
2. **FINDING**
3. **EVALUATING**
4. **CREATING**
5. **COMMUNICATING**

You can adapt the order to suit your teaching. You may not need to incorporate all five, or you may want to repeat stages.

Throughout the task or project encourage students to refine and improve their work, and when they have finished reflect on what went well and not so well. This includes their use of technology. They can then decide what they would do differently next time.

The questions for each aspect are those that learners should consider. Use them as a handy reminder.

FIND
- Do they know how to search safely and effectively online?
- Should they use Google or another search method?
- Can they download, store and retrieve data efficiently?
- Do they understand issues around copyright and plagiarism?

EVALUATE
- Which information types are best for the task and audience (e.g. words, pictures, data)?
- How will they make judgements about accuracy and reliability?
- How are they developing and refining information, rather than just cutting and pasting?

DEFINE
- Can the students clarify the task?
- What do they know already, and what do they need to find out?
- Who is the intended audience, and what are their needs?
- What digital/traditional resources are available for them to use?

REFLECT AND PROGRESS

CREATE
- What technology skills do they have/need to develop?
- Who can support them?
- What formats could they use to present their work and are they appropriate for the audience?
- Can they justify their choice of technologies?
- Are they refining and improving their work?

COMMUNICATE
- Can they choose the most appropriate digital tools to:
  - exchange information and ideas
  - develop work in collaboration with others
  - publish their work?
- Do they know how to act safely and responsibly online and who to ask for help if something upsets them?

Digital literacy = technology use + critical thinking + social awareness

Contents

Introduction

Primary School
Case Studies

Secondary School
Case Studies

Conclusions

Appendix

About Becta

Becta is the government agency leading the national drive to ensure the effective and innovative use of technology throughout learning.

It is our ambition to utilise the benefits of technology to create a more exciting, rewarding and successful experience for learners of all ages and abilities, enabling them to achieve their potential.

We do this in many ways. We make sure the right technology is available, we influence the development of policy, and we set standards and provide tools that help establish and promote best practice.

We know that technology has the potential to transform learning. We are committed to inspiring education providers to realise that potential, and equip learners for Britain's future success.

Supported by

Becta leading
next generation
learning

Digital Literacy in Practice

Key to Futurelab research themes

Futurelab understands that you may have specific areas of interest and so, in order to help you to determine the relevance of each project or publication to you, we have developed a series of themes (illustrated by icons). These themes are not intended to cover every aspect of innovation and education and, as such, you should not base your decision on whether or not to read this publication on the themes alone. The themes that relate to this publication appear on the front cover, overleaf, but a key to all of the current themes that we are using can be found below:

For more information on our themes please go to www.futurelab.org.uk/themes

Digital Inclusion – How the design and use of digital technologies can promote educational equality

Innovative Teaching – Innovative practices and resources that enhance learning and teaching

Learning Spaces – Creating transformed physical and virtual environments

Mobile Learning – Learning on the move, with or without handheld technology

Learner Voice – Listening and acting upon the voices of learners

Games and Learning – Using games for learning, with or without gaming technology

Informal Learning – Learning that occurs when, how and where the learner chooses, supported by digital technologies

Learning in Families – Children, parents and the extended family learning with and from one another

Contents

Introduction

Primary School
Case Studies

Secondary School
Case Studies

Conclusions

Appendix

About Futurelab

Futurelab is an independent not-for-profit organisation that is dedicated to transforming teaching and learning, making it more relevant and engaging to 21st century learners through the use of innovative practice and technology.

We have a long track record of researching and demonstrating innovative uses of technology and aim to support systemic change in education – and we are uniquely placed to bring together those with an interest in improving education from the policy, industry, research and practice communities to do this.

Futurelab cannot do this work on its own. We rely on funding and partners from across the education community – policy, practice, local government, research and industry – to realise the full potential of our ideas, and so continue to create systemic change in education to benefit all learners.

Also from Futurelab:

Literature Reviews
and Research Reports
Written by leading academics, these publications provide comprehensive surveys of research and practice in a range of different fields.

Handbooks
Drawing on Futurelab's in-house R&D programme as well as projects from around the world, these handbooks offer practical advice and guidance to support the design and development of new approaches to education.

Opening Education Series
Focusing on emergent ideas in education and technology, this series of publications opens up new areas for debate and discussion.

futurelab
innovation in education