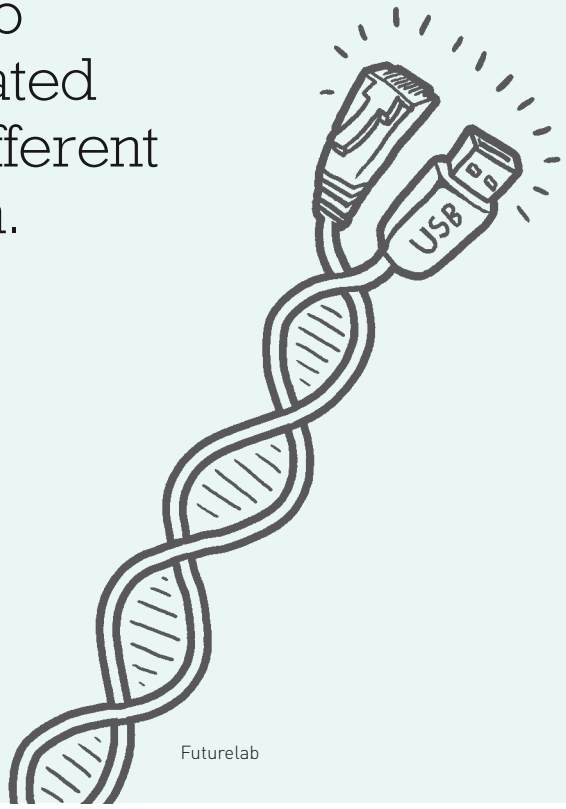
Why is DNA the Molecule of Life?

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.



Why is DNA the Molecule of Life?

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.

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

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.