Towards Education 4.0
Emerging best practice in IT infrastructure and resources

Dr Phil Richards, Chief innovation officer, Jisc
for Schools & Academies Show 2019 London
1. About Jisc
2. Infrastructure
3. Resources
4. Data & analytics in learning
5. Towards Education 4.0
Stop Press! 3 April 2019 – a good day to bury great news!

1. About Jisc
About us

Our vision is for the UK to be the most digitally advanced higher and further education and research nation in the world.

We provide

- Shared digital infrastructure
- Sector-wide vendor and publisher deals
- Expert trusted advice
Jisc in numbers

- Colleges: 310
- Universities: 160
- Research institutes: 40
- Users: 18 million
2. Infrastructure
Janet network

More than 8,500km of optical fibre

18 million end users from 730 organisations

Petabytes of data carried each day

jisc.ac.uk/janet
Cyber security – we protect the network and beyond

**Security operations centre**
A range of services to help reduce the risk of losing your connection

**DDoS mitigation**
A range of services to help reduce the risk of losing your connection

**Email advice and testing**
Testing your mail servers and reporting unauthorised relays

**Web filtering and monitoring**
A range of solutions – choose the most appropriate technology and toolset for you

https://www.jisc.ac.uk/network/security


https://www.bbc.co.uk/news/education-47805451
Six steps to the cloud

1. Strategy
2. Discovery
3. Approach
4. Plan
5. Implement
6. Optimise and support

https://www.jisc.ac.uk/network/cloud
Helping build case for investment

Financial X-ray
https://www.jisc.ac.uk/financial-x-ray

Library financial X-ray
https://www.jisc.ac.uk/library-financial-x-ray

Cyber security financial X-ray
https://www.jisc.ac.uk/cyber-security-financial-x-ray

Data financial X-ray
https://www.jisc.ac.uk/data-financial-x-ray?
3. Resources
Jisc building digital capability

Try our Discovery tool

Learn about our Community of practice

Find answers in Advice and guidance

Explore our Training

https://digitalcapability.jisc.ac.uk/
Accessibility

UK law on web accessibility

Practical resources and advice to help you understand and implement the new legislation.

On 23 September 2018 new regulations on the accessibility of websites and mobile applications of public sector bodies came into force in the UK.

These regulations implement the EU directive on web accessibility and require public sector websites and mobile applications to achieve specific accessibility standards. This applies to all publicly-funded higher and further education institutions.

https://www.jisc.ac.uk/accessibility
Digital content and resources

Historical texts
https://historicaltexts.jisc.ac.uk/

Hairdressing training
https://hairdressing.jisc.ac.uk/

Citizen Maths
https://www.jisc.ac.uk/citizen-maths

Geospatial data
https://www.jisc.ac.uk/geospatial-data

https://www.jisc.ac.uk/content/resources
AR and VR on a virtual budget

How Preston's College brought virtual reality and augmented reality to their classrooms, without the cost.

"If we hadn't asked Jisc for some help and gone to see Matt we may have gone down the wrong path and invested in something that was never going to give us the return we needed. We might have made an expensive mistake."

Steve Smith, learning outside the classroom project manager, Preston's College

https://www.jisc.ac.uk/further-education-and-skills/case-studies/ar-and-vr-on-a-virtual-budget
Supporting UK Edtech

Selected from the best edtech companies across Europe

Emerge Accelerator
12-20 companies in 3 cohorts of 3 months each focused on increasing customers and attracting significant investment. The accelerator is owned by Emerge.

Pre-accelerator
5 companies in one 6 month programme focused on developing their product to sell to universities and colleges

Edtech challenges
2 challenges per year seeking bold new ideas in response to real sector challenges

Open to the best new start-ups in the UK
Open to anyone with good edtech ideas

Towards Education 4.0

https://www.jisc.ac.uk/rd/projects/edtech-launchpad
4. Data & analytics in learning
Jisc national learning analytics – learning data hub
A world-first national learning data infrastructure – for the UK

https://github.com/jiscdev/learning-analytics
Jisc learning analytics service

Ethics & data security  Data explorer  Study goal app  Learning analytics predictor

https://www.jisc.ac.uk/learning-analytics
Beyond learning analytics

Intelligent campus

Employability & apprenticeship analytics

Curriculum analytics

Wellbeing analytics
Jisc Artificial Intelligence

Current Projects
- Chatbots
- Research metrics
- Essay Mill Detection
- AI Playground
- Campus Sentiment Analysis

Approaches
- Machine Learning
- Graph Theory
- Natural Language Processing
- Image Recognition
- Stylometrics

Technology
- AWS
- Azure
- Python

JiscBot – sentiment aware chatbot
The text is colour coded to show what we think the sentiment is - green (positive), blue (neutral) or red (negative).

Hello!

And hello to you!

What is Jisc?
Jisc provide digital solutions for UK education and research. Jisc’s vision is for the UK to be the most digitally-advanced higher education, further education and research nation in the world.

I love Jisc!

You sound really positive about that! Thanks!!

But I’m really pretty angry about something!

Ok, I can see you aren’t happy - let me get my supervisor (Note: At this point a human could take over from the bot, as humans are better at dealing with angry people.)
5. Towards Education 4.0
A revolution that knows no collars

“New technologies and approaches are merging the physical, digital, and biological worlds in ways that will fundamentally transform humankind”

“The extent to which that transformation is positive will depend on how we navigate the risks and opportunities that arise along the way”

“The changes are so profound that, from the perspective of human history, there has never been a time of greater promise or potential peril”

from The Fourth Industrial Revolution by Klaus Schwab, founder of the World Economic Forum

(photo CC BY-NC OECD)
Shaping the student experience of the future

**Teaching transformed** – how should human teachers focus their efforts if AI and other technologies become used to their full potential in the university experience

**Personalised adaptive learning** – an individualised approach that takes learner diversity, performance and behaviour into account

**Assessment re-imagined** – can AI, digital experiential learning and micro-credentials replace high stakes summative tests?

**Intelligent digital and physical estates** – which work together and are responsive to student journeys and interactions
Leading our sectors on a journey

Learning & wellbeing analytics

Intelligent campus

Curriculum analytics

Cognitive Analytics and AI

Now → Education 4.0

Better retention and attainment
VLE data + Student record system + Attendance data + Library data

A more efficient campus
Buildings data + Learning space data + Location data

Improved teaching & curricula
Teaching quality data + Assessment data + Curriculum design data

Personalised and adaptive learning
Content data + Learning pathways data

Efficient campus
Retention and attainment

Efficient campus
Retention and attainment

Retention and attainment
‘Civic Responsibility 4.0’ for schools, colleges & universities

Enlightenment 4.0

Dark Ages 4.0

“AI will be the best or the worst thing for humanity.” Stephen Hawking, 2018
Thanks for listening

Dr Phil Richards
Chief innovation officer
phil.richards@jisc.ac.uk

Except where otherwise noted, this work is licensed under CC-BY