Evolution to Revolution: A National Research and Education Network perspective

Dr Esther Wilkinson, Head of International, Jisc
Who are Jisc?

We are the UK’s digital agency for lifelong learning and research. We are a social enterprise of 750 people dedicated to:

Our Vision
For the UK to be the best place in the world to use technology to learn, teach and research

Our Aim
By, each day, powering UK’s Higher and Further education’s teaching, learning and research, inspiring its digital transformation, and building solutions that make it happen
Jisc’s evolution (a brief history of Jisc)

1966 – The Computer Board is born

1970 – Post Office: provides 48 kb/s lines between five universities in South West UK

1973 – Wells Report: identified need for national computer network between universities and Research Councils

1976 – Joint Network Team (JNT) set up

1984 – JANET launches – fastest computer network in the world

1990 – JISCMail (national mailing list) launches; Jiscmail now +1M users

1993 – JISC (Joint Information Systems Committee) created; Follett Report on supporting libraries in a digital age

1994 – JISC e-Library programme launched

1995 – JISCnetskills for training and development launched

1997 – JISC expands to Further Education

2000 – Single Sign On; Regional Support Centres established

2001 – Data centres and data services launched

2002 – JANET reaches 10Gb/s

2003 – SHERPA, university research repositories launched

2004 – Digitisation programme started

2006 – SuperJANET5 reaches 40Gb/s
Jisc, as we are now
The UK’s lifelong learning and research digital agency
The UK’s lifelong learning and research digital agency

e-infrastructure to support
Solutions to enable education and research
Advice and guidance
New solution development
e-infrastructure to support

Connect and protect
e-infrastructure to support

DDoS

DNS resolver

Cyber security

Penetration testing
Access and authentication to support
e-infrastructure to support

Data centres

Processing

Cloud

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

Your transformation journey
Solutions to enable education and research

- Open science / Research
- Libraries and Learning resources
- Data and analytics
Advice and guidance

Areas covered include:

- X-Rays
- Strategic transformation
- Digital experience insights
- Building digital capabilities
- Infrastructure audits
New solution development

- Intelligent campus
- Digital enablement
- Curriculum analytics
- AI
- Education and Research 4.0

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Welcome to the industrial revolution 4.0

1.0 Mechanical
Mechanical production equipment
1784

2.0 Electrical
Mass production
1870

3.0 Internet
Automated production
1969

4.0 Digital
Automated complex tasks
Today

Empowering corporations
Scalable efficiency
Doing things right

Empowering people
Scalable adaptability
Doing the right thing

10x impact of the internet revolution
Blurring the physical and cyber digital divide
Impact:
Socio-economic
Industry
Government
Individual

Impact on society bigger than industry

© The Duality
What are 4.0 technologies?

- AI
- Cloud computing
- Mixed, augmented and virtual reality
- 5G and Internet of Things
- Blockchain
- Quantum computing
What is Education 4.0?

- Fourth industrial revolution technologies like AI and robotics have the potential to transform teaching and learning
- Institutions are preparing our learners for an Industry 4.0 workplace
- Transformation of institutions themselves, embracing Industry 4.0 technologies
- 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
… and Research 4.0?

• Building on Education 4.0
• Exploring opportunities and challenges presented to UK research by the convergence of 4th industrial revolution technologies
• Focus on ‘automated’ research
• Considering questions such as:
  • What ‘4.0’ technologies could transform and enhance research practice, interactions and policy?
  • How will ‘4.0’ technologies be applied across different disciplines?
  • How can the ‘human’ and the technology be combined to best effect?
  • What is the research lifecycle under a ‘4.0 enhanced’ future; are there risks to the researcher, the practice of research and the aim of knowledge generation under a 4.0 enhanced future? How can any risks be mitigated?
  • Where are we today (skills, infrastructure, legal/ethics, culture), where are we going, how do we get there?
What about International and Transnational Education 4.0?

• How can we realise the untapped potential of technologies across the international education ecosystem to be at the forefront of international education and TNE 4.0? How do we plan for the future utilising technologies such as artificial intelligence, virtual, mixed and augmented reality? What will future models of TNE look like, and how will such boundaries blur with international education?

• What will a global ‘smart’ campus look like?

• How do we develop immersive and interactive, and most importantly responsive learning for TNE students?

• How can students have a digital identity, not just associated with the campus, that they can carry globally throughout all stages of the learning lifecycle through to employment, integrated with the major providers such as Amazon, Google, Microsoft and Netflix? How do we integrate this for the benefit of our global citizens?

• How do we equip the mobile student with digital skills and capabilities for the global environment? How are we considering the TNE student digital experience?

• What are our responsibilities under the UNESCO Sustainable Development Goals – sustainability, climate and change and social inclusion?
How to get in touch

Dr Esther Wilkinson, Head of International, Jisc
Esther.wilkinson@jisc.ac.uk
T 07751 265 648
Jisc.ac.uk