



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

BMHP6026_BIRM

Week 1

Introduction to the module and Digital Innovation in Health and Social Care

Trawsnewid Addysg, Trawsnewid Bywydau
Transforming Education, Transforming Lives

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During the session...



Introduction to the
module

Overview of Industry
4.0

Introduction to digital
innovation on health
and care



Welcome to BMHP6026_BIRM

Module Aim:

- To evaluate the impact and implications of the digital transformation of services within health and care for professionals, service users and, providers.

Learning Outcomes:

Upon successful completion of this module you should be able to:

- Evaluate contemporary digital transformations for professionals and service users within the health and care.
- Investigate innovation digital technologies and devices and the impact upon communities and populations.

Module Title: Digital Transformation in the Health and Care professionals	
Week 1	Introduction to the module and digital innovation in health and social care
Week 2	The Health and Social Care Digital Strategy
Week 3	Information Governance and ethical use of data
Week 4	The health and wellbeing of the individual - Overview of recent digital developments and innovations
Week 5	Public Health - Overview of recent digital developments and innovations
Week 6	Revision and Review - Digital Innovation - Barriers and Benefits
Week 7	Innovations - a focused session on case studies
Week 8	Developing critical analysis of digital innovation. Component 1 Workshop - structured support session
Week 9	Component 2 Preparation Session - Summarising your research and findings
Week 10 & 11	Component 2 - Viva Voca - Individual assessments

Assessments

Component	Task Overview	% of module	Submission Week
Component 1	Written Report– 2000 words	50	Week 8
Component 2	Viva (Oral Presentation) 10mins + 5 min questions	50	Week 10

There will be time allocated within class to develop each piece of work, you must show your lecturer progress during class sessions.



Navigating our Module Moodle Page

Panopto

The Panopto tile at the top of the page will show you the links to all available lecture recording for this module.

Lecture materials

Each week, you will find the 'lecture materials' this will include the slides and resources used in your class sessions.

Independent Study Materials

Each week, you will find additional resources for your independent studies, you will need to be proactive with your reading and note taking.

Quick Activity



Which area of health and care are you most interested in?

Complete the choice activity in week 1.

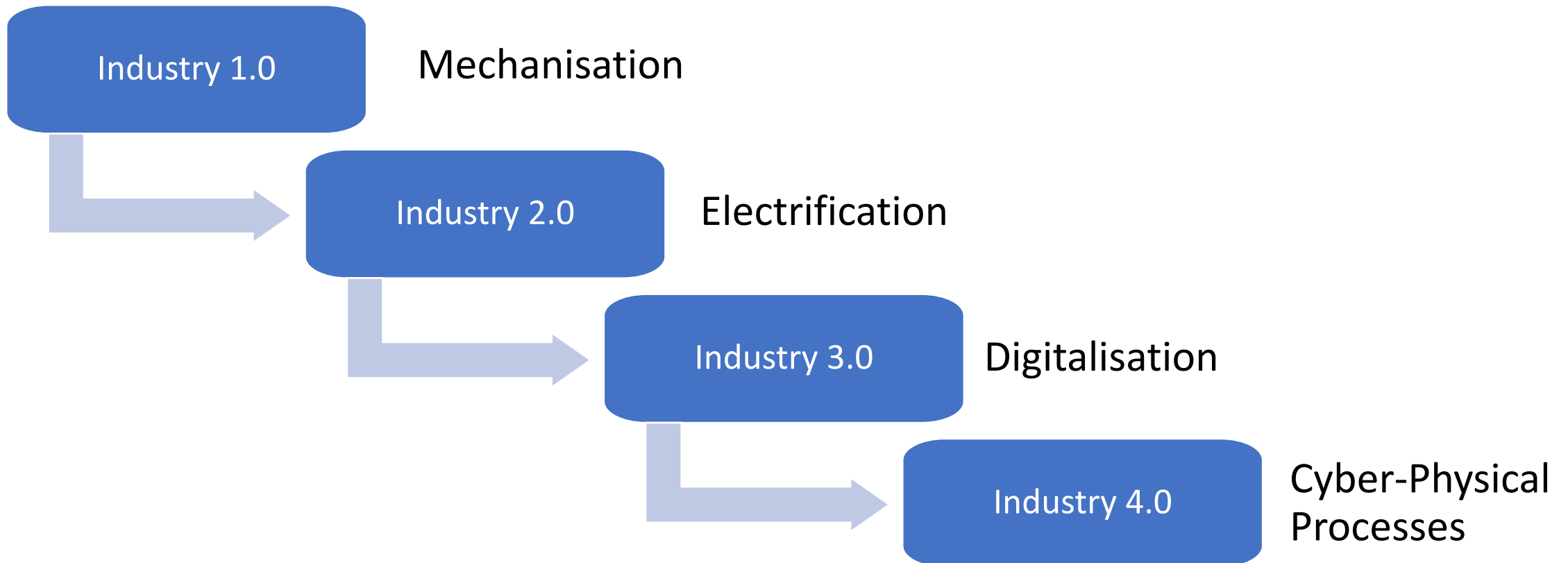
How diverse or similar are our areas of interest?

Introduction to Industry 4.0





What is meant by Industrial Revolutions?





Industry 1.0 - Mechanisation



- The development of increasingly complex machines.
- Large structures made.
- Factory machines created.
- Rapid socio-economic change.
- Improvements in public health.



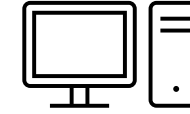
Industry 2.0 - Electrification



- Introduction of electricity.
- Development of telephone.
- Combustion engines for cars, planes, lorries.
- Increased travel and communication.
- Rapid sharing of knowledge.



Industry 3.0 - Digitalisation



Invention of the Transistor (1947)

- The invention of the transistor marked the start of the Third Industrial Revolution (Industry 3.0), leading to innovations in small radios, calculators, and later, modern computers through the miniaturisation of transistors into silicon chips.

Digitalization and Computer Networks

- Unlike earlier revolutions that mechanized processes, Industry 3.0 is defined by digitalisation, where computers process information, leading to the creation of computer networks and the sharing of data and resources.

Development of the World Wide Web

- The World Wide Web emerged in the early 1990s, enabling widespread access to information and leading to the development of the global internet, which transformed communication and information sharing.

Evolution to Web 2.0

- By the early 2000s, the web evolved into Web 2.0, characterised by interactive experiences rather than static webpages, turning the web into a global platform that transcended geographic and time constraints.

Impact of the Internet on Society

- The internet, coupled with new devices and hyperconnectivity, revolutionised many aspects of life, work, and play, with 5 billion people now connected and several billion more expected to join.

Transition to Industry 4.0

- The Third Industrial Revolution laid the groundwork for Industry 4.0

Industry 4.0

Ongoing Third Industrial Revolution

Digitalisation becoming increasingly transformative through faster processing, cloud services, and improved software.



Transition to the Fourth Industrial Revolution

A new phase of technological and societal change, known as the Fourth Industrial Revolution or Industry 4.0, is emerging, building on the foundations of the Third Industrial Revolution.



Cyber-Physical Systems

The Fourth Industrial Revolution is characterised by the integration of digital and physical systems, leading to the development of cyber-physical systems such as the Internet of Things (IoT) and smart industrial production.

Industry 4.0

Cyber-physical Systems

Influence of Scientific Advances:

- Innovations in physics, chemistry, and biology are playing a growing role in this revolution, potentially intersecting with the biological sciences as part of the ongoing transformation

Broader Impact Beyond Industry:

- While Industry 4.0 focuses on manufacturing, the Fourth Industrial Revolution is affecting almost every aspect of life, including work, lifestyle, and society as a whole

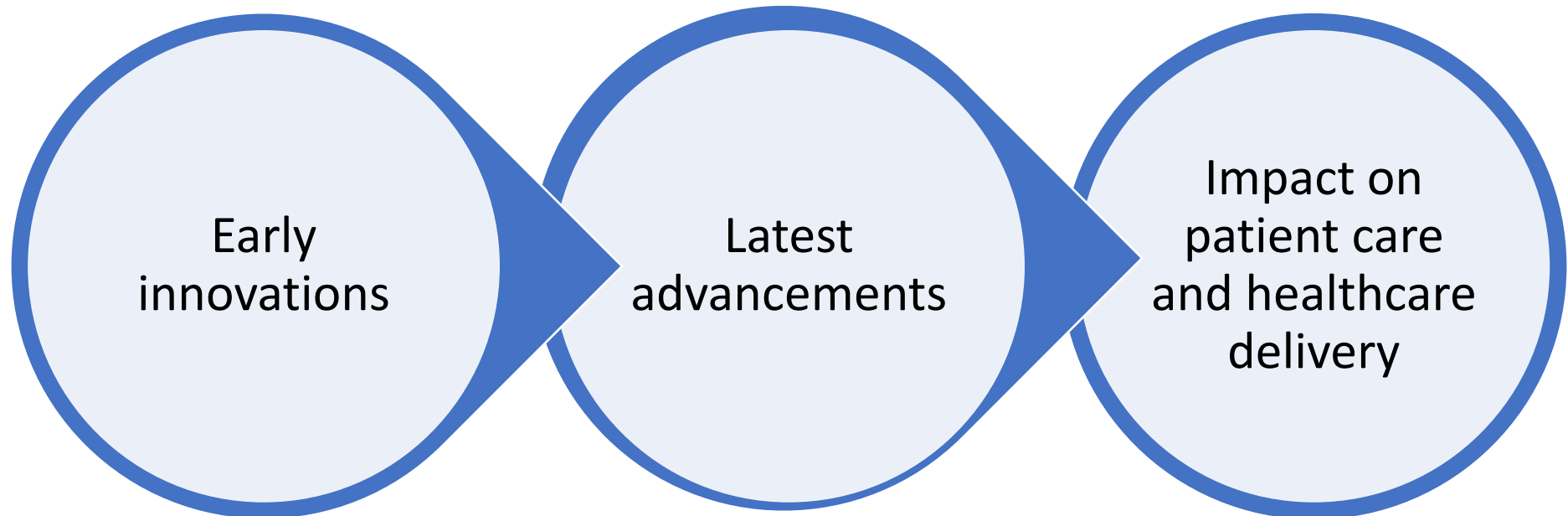
Significance and Challenges

- Although the Fourth Industrial Revolution is still in its early stages, it promises significant implications, challenging existing industries, work practices, and the role of humans in the world, especially with the rise of automation and AI.

Technological Innovation: A Historical Overview

Technological Innovation: A Historical Overview

We will explore the evolution of health technology and informatics within the UK health and social care systems.



Health Technology and Informatics



Health technology and informatics refer to the use of digital tools and data management systems to enhance healthcare delivery.



There have been key milestones in the development of these technologies in the UK, with significant innovations leading to profound implications for the NHS and social care system .

Early Developments (Pre-1948)



Before the establishment of the NHS, healthcare technology was relatively primitive.



Innovations included basic diagnostic tools like the stethoscope and early imaging technologies such as X-rays.

These early developments laid the groundwork for modern medical technology.

999 Service

First established in 1937 in response to a number of preventable deaths that were blamed on people being unable to connect to emergency services.

Ease of Use

- The number "999" was chosen because it was easy to remember and could be quickly dialled on rotary phones, especially in low-light or smoke-filled conditions.
- It also avoided being accidentally dialled, unlike some other sequences of numbers.

Technological Advancements

- Technological advancements in the 1930s made it possible to create a dedicated emergency line.
- The service was designed so that calls made to 999 would bypass normal switchboards and connect directly to a specialised operator who could then dispatch the appropriate emergency service.

The West Midlands 999 Emergency Service takes approx. 4000 calls per day (1 every 20 seconds)

Formation of the NHS (1948)



The NHS was founded in 1948 with the aim of providing universal healthcare to all UK residents.



Early technology use was limited, focusing on basic diagnostic and record-keeping tools.



The NHS marked the beginning of a more structured approach to healthcare delivery in the UK.

(Nuffield Trust, 2025)

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- Introduction of Electronic Health Records (EHRs)
 - Revolutionising record-keeping and patient data management.
 - Development of Advanced Medical Devices
 - MRI and CT scanners, also emerged, enhancing diagnostic capabilities.
- (Science Museum, 2025; Coiera, 2015)

(Science Museum, 2025; Coiera, 2015)



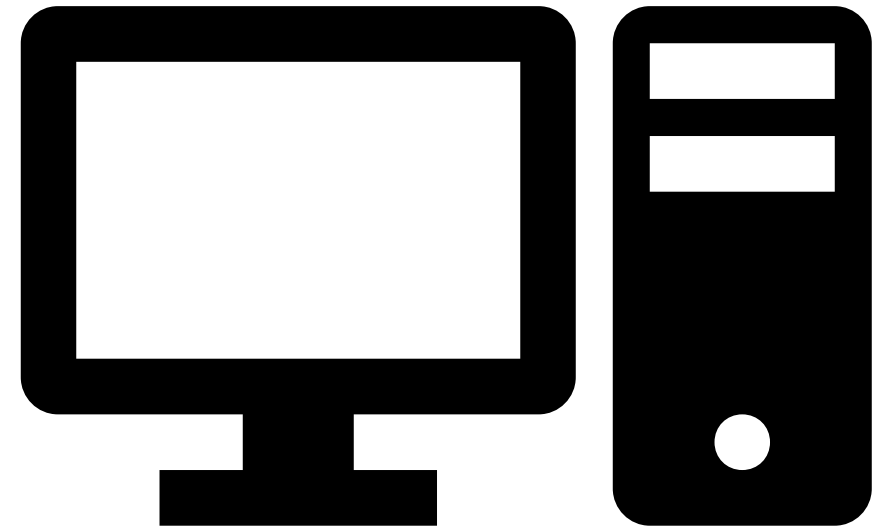
1980s Innovations

Health Informatics

- Early care management systems

Assistive Technologies

- Mobility aids and communication devices

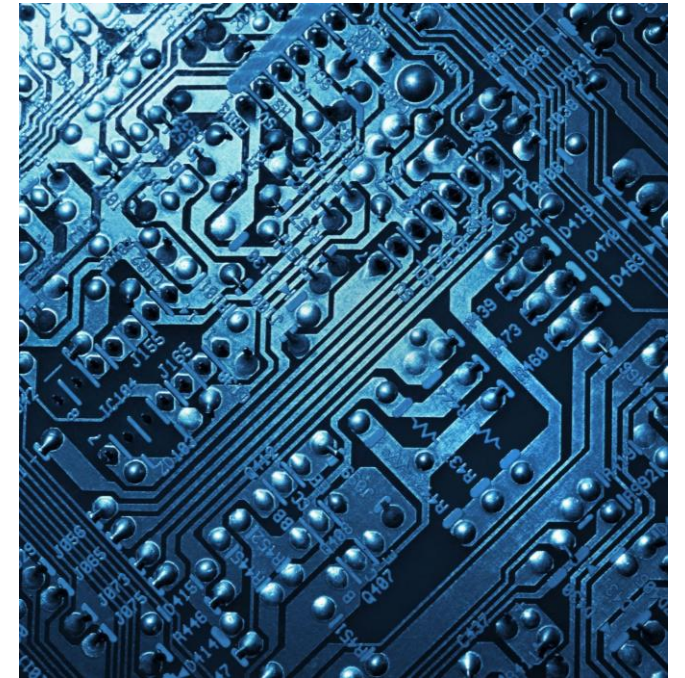


In the UK, many GP practices began computerising patient records from the early 1970s onward, with broader adoption through the 1980s and 1990s

Health Informatics in the NHS – 1990's

The Information Management and Technology (IM&T) Strategy (1992)

- The 1992 IM&T strategy was one of the first comprehensive plans aimed at modernising NHS information systems.
- It emphasised the need for electronic patient records (EPRs) and standardized data systems across NHS organisations.
- The strategy aimed to improve data accuracy, availability, and the integration of health records to enhance patient care and healthcare planning.



Early 2000s Developments

NHS Digital

- focusing on the integration of digital technologies into healthcare.

Telecare services

- providing remote monitoring and support for patients, especially the elderly and those with chronic conditions.

(NHS Digital, 2021; UK Parliament, 2023)

2010s Advancements

Integrated Care Systems (ICS)

- Digital solutions and coordination
- Collaborative Working
- Integrated Care Pathways
- Shared Resources and Budgets
- Focus on Preventative Care and Population Health
- Technology and Digital Integration

Mobile Health Apps

- Use and impact
- “My Health” pilot app in 2012
- “Patient Access” app in 2016

Ongoing and Future Developments

AI and Machine Learning:

- Continued exploration of AI technologies for enhancing diagnostic accuracy, predicting patient outcomes, and personalising treatment plans.

Blockchain for Health Records:

- Research into using blockchain technology to secure and streamline health records and patient data.

Wearable Health Technology:

- Increasing integration of wearable devices for monitoring health metrics and managing chronic conditions.

(Topol, 2019; Xie et al., 2021; Saeed et al., 2022)



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UK Research
and Innovation

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£13 million for 22 AI for health research projects

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10 August 2023

Projects aim to transform health using artificial intelligence (AI) to assist and refine diagnostics and procedures.

Related content

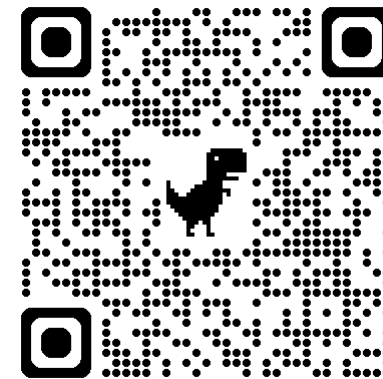
- ⇒ Experts to lead AI Safety Summit preparations as new funding announced to modernise healthcare
- ⇒ UK Science and Technology Framework

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COVID-19 as a Catalyst for Digital Health

Since the COVID-19 Pandemic and subsequent lockdowns and other measures, there has been...

- Rapid shift to telehealth and remote consultations
- Widespread adoption of digital triage and symptom-checker apps
- Acceleration of data-sharing and vaccine development platforms
- Legacy: normalisation of digital-first healthcare



Activity: Winners and Losers of Innovation

In groups, pick 3-4 innovations from today's session.

- For each, identify...
 - Winners - who benefited?
 - Losers - who faced challenges?
- Be ready to share one winner and one loser with the class.



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Reflect

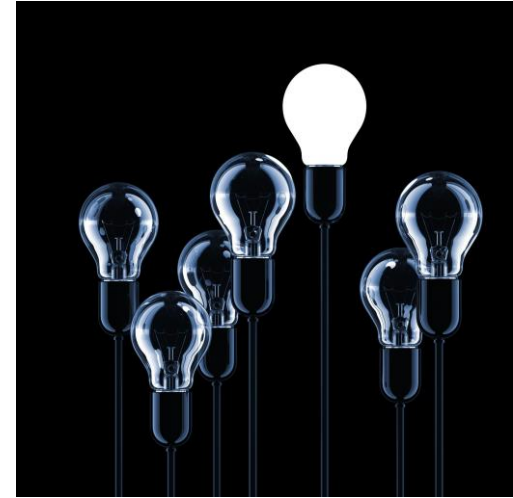
- What innovation and changes in health and care have you observed, experienced or used during your lifetime?
- What innovations do you *imagine* could be developed in the future?

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Spotlight Innovation

Oxevision...



How **oxevision** supports staff to keep patients safe

Correlated with patient and carer reports



Oxevision

- Small group Discussion

- 
- 
- What benefits do you feel Oxevision would have for a patient?
 - What benefits do you feel Oxevision could have for support staff?
 - What challenges or barriers could the Oxevision system present for staff or patients?



During this session we have...

Introduced to the
module

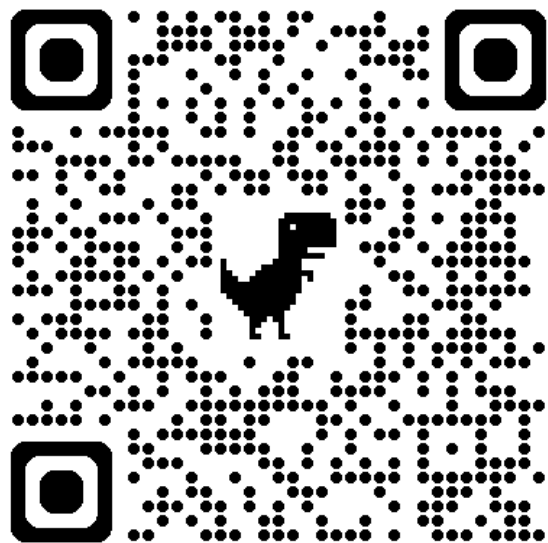
Overviewed Industry
4.0

Introduced digital
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Remember UWTSD Resources...

UWTSD Library Support



Academic and InfoSkills

Our Skills programme is designed to create opportunities for students to develop their transferable academic and information skills, facilitating both their academic success and employability. The curriculum covers a wide range of topics – from finding library resources to fake news to managing your online presence.

Our team of Academic Liaison Librarians have developed a series of online Units that allow you to develop your skills anywhere, anytime, to suit you. Click the tiles below to get started:



The UWTSD Library team have provided additional support to help you to develop your research skills. These are available for you to work through at your own pace.

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