Getting innovative and hands-on with employability skills

Practical work you can talk about

Nick Braithwaite
STEM
28/2/24
Getting innovative and hands-on with employability skills

Practical work you can talk about

Audience profile:
See Poll on primary STEM subject
STEM Vision:
Inclusive, innovative and high impact STEM teaching and research, equipping society for tomorrow’s challenges
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Getting innovative and hands-on with employability skills

Practical work you can talk about

Audience profile:
See Poll interdisciplinary STEM themes
Our STEM in your future

A STEM Graduate .... a STEM researcher ...

A. Communicates well

B. Expects education for life

C. Is a ‘Knowledge Exchanger’

D. Can articulate risk and uncertainty

E. Engages with formal and informal learning

F. Balances depth of subject knowledge with networking

G. Takes a holistic / systems view and copes with complexity

H. Has awareness of Arts/Social Sciences/Languages/Society

Consider True/False?
Select most appealing
Select most challenging
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Practical work you can talk about

Audience view:
See Poll on practical work
Getting innovative and hands–on with employability skills

Practical work you can talk about

Dr Stanley Love, NASA

• Physicist
• Astronomer
• Planetary Scientist
• Astronaut
• Space Engineer
• Artemis Capsule Communicator

"Getting on with people has been a key survival skill"
The OpenSTEM Labs
Taking laboratories, field sites and observatories to students

- **Interactive:** real data and authentic interfaces
- **Available:** beyond conventional teaching hours
- **Ownership by engagement:** >100,000 student-hours/year

- **Onscreen experiments:** hypothesis-driven enquiries
- **Live data streams:** user-determined sampling
- **Remotely controlled instruments:** individual and group access
- **Labcasts and Fieldcasts:** hypothesis-driven investigations
- **Technical computing:** browser access to software and processing power
Virtual Internship Scheme
Employability for underrepresented students and recent graduates

- **35 paid internships** since 2021 for students from minoritized ethnicities, disabled students, and students from the most deprived areas
- **Flexible, part-time and virtual** – to fit around study and busy lives
- **Diverse opportunities** – many working on co-creation of a more inclusive curriculum and inclusive student experience
- **Winner** of a 2023 sparqs student engagement award in the Diverse Voices category

“My experience with the internship has truly been uplifting... All the experiences that I have gained played a vital role in my job applications and interviews. As a result, I was able to secure a position on a teacher training program that I wanted.”

–Norain, STEM intern
Project modules

Addressing the 'sustainability skills gap' in the UK workforce

- **Employers report that** the largest skills gaps include waste reduction, data analysis and energy tracking or usage.

- **Practical, problem solving** – to create and solve a real-world problem from start to finish using prior knowledge from Stage 3 modules.

- **Critical information** – Find, critically evaluate and use current information on renewable energy technologies – a rapidly changing field.

- **Appraise** results and draw well-grounded conclusions based on the evidence assembled.

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**The magic of renewables**

“I was forced to explore areas of science/engineering entirely new to me, such as solar concentrator design/integration methods. During the research phase, I had to scour informational databases, extensively read through and comprehend a multitude of topics – increasing my knowledge significantly.”

—JR, STEM Final Year project student
Employability-driven curriculum I
Meeting the cyber security needs of industry

➢ **Curriculum** aligned to CyBOK and CIISec Skills Framework

➢ **Institute of Coding** inspired competencies and skills focus

➢ **Core cyber security modules** aligned with industry-recognised certification (CompTIA CySA+ and EC-Council CeH, Cisco Network Security)

➢ **Accredited by National Cyber Security Centre** (PG accredited in 2023 and the UG later in Oct 2024.)

“We are UK’s largest cyber security qualification Provider” (4000+ students currently registered)
Employability-driven curriculum II
Proposals for BSc in Computer Science with Artificial Intelligence

➢ **Industrial advisory board** – detailed consultation to embed employability skills

➢ **Qualification-wide Guest lecture series** – talks by industry experts from variety of backgrounds on key qualification topics, and will support professional networking

➢ **AI Solutions Portfolio** – students can use in interview/selection processes

➢ **Research focus** – ‘AI in practice’ module where OU research is shared and explored

➢ **Industry connections** – building OU-industry connections to support students

The Open University
STEM:

Inclusive, innovative and high impact STEM teaching and research, equipping society for tomorrow's challenges.
STEM: practical work you can talk about

Data and Information
- Facts, Evidence
- Uncertainty, Ethics

Equipping society for tomorrow’s challenges

Sustainable Environments
- Natural, Built, Micro to Planetary

Digital thinking
- Internet of Things
- Smart machines, Intelligent Systems

Life and Health
- Sustainable Existence (health and infrastructure)
- Facts, values and beliefs

Internal funders and collaborators

External funders and collaborators

The Open University