

Amplifying learning experiences with RESILIENCE

A case study with University of Edinburgh



+ What is this case study exploring?

In November 2025, Prof. Garry Blakely, Chair of Microbial Genetics and Biotechnology, visited the RESILIENCE team at Heriot-Watt University, with 19 final-year undergraduate students enrolled on the University of Edinburgh's Biotechnology Degree Programme.

The University of Edinburgh is a globally recognised university that provides world-class teaching and research. Ranked fourth in the UK for research power. Hear how their Biotechnology Degree Programme have used RESILIENCE to enhance their students learning experience and skills.

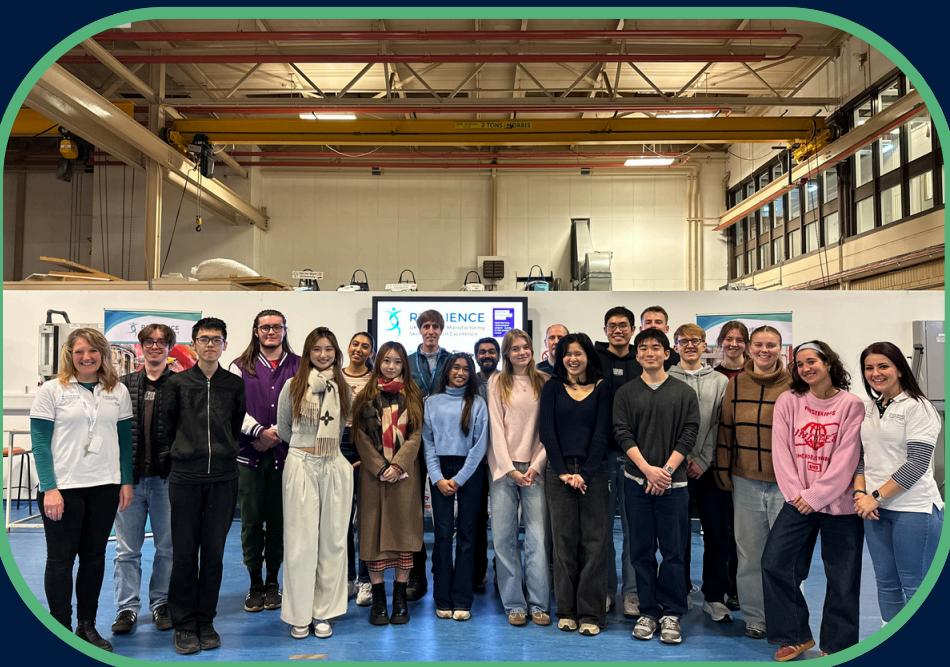


+ Why choose RESILIENCE?



Garry was informed of RESILIENCE through connections at IBioIC and FlexBIO. He explained that he felt RESILIENCE could be a great way to enhance learning experiences and skills for final-year students studying the University of Edinburgh's Biotechnology Degree Programme.

Garry explains that "these students had learned the theory behind fermenter design and applications in industrial settings, however, they had no practical 'hands-on' experience with fermenters or bioreactors. RESILIENCE provided an Augmented Reality (AR) experience where students could virtually handle a bioreactor vessel in a biosafety hood, then install probes and connect them to a controller. This session provided a safe environment where students could become familiar with expensive equipment without fear of causing damage. The students were then able to use them for real and assemble them in a real bioprocessing facility at FlexBIO after the AR. The identification of probe function and control possibilities provided a tangible connection to the pedagogical content of lectures and helped reinforce the learning outcomes. Overall, the RESILIENCE team's enthusiasm and dedication to supporting learning provided an incredible experience which positively impacted student opinion on the potential for a career in the biotech sector.



On exploring barriers or challenges that RESILIENCE has helped University of Edinburgh overcome, Garry mentioned “Supplying bioreactor vessels for students to handle in a lab setting is generally too expensive for most universities. The ability to simulate this in AR/VR provides an incredible tool to allow familiarisation with expensive and fragile equipment.”

Also noting that “we hope the RESILIENCE team will help in the future to train other undergraduate cohorts in the handling of bioreactors.”

Garry shared some of the students feedback with the RESILIENCE team following the event:

“FlexBio's tour and VR experience made bioreactor scale-up processes feel clear, accessible and genuinely interesting.”

“The visit to FlexBio was motivating and gave me a deeper understanding and appreciation of how fermentation and bioreactors can be used in real-world settings.”

“The virtual reality experience was incredibly enjoyable and undoubtedly a fantastic way to prepare for real life lab work.”

“The visit was both engaging and informative and provided a very enjoyable insight into the industry”.



For others who are considering RESILIENCE enhanced membership but thinking that there may be barriers to this, Garry expressed that

“The RESILIENCE team provide an enthusiastic environment that supports student learning and encourages those wary of the wet-lab environment to engage with complex equipment and processes. The experience fosters confidence in handling equipment and reinforces theoretical knowledge. RESILIENCE provides an invaluable teaching tool.”

Interested in becoming an enhanced member?

 Sign up to our [free standard membership](#)

 Contact us to arrange a VR demo with your local partner. You can come onsite to us, or we can travel to you. Email us at: resilience-skills@contacts.bham.ac.uk.

 If you wish to sign up, your local partner will work with you to complete the membership paperwork.

 You will then receive your VR headsets, FourPlus Immersive and Bodyswaps licences and be given training in how to use these.

 If you are interested in the Workplace Accelerator programme(s), we will work with you to co-deliver the first cohort. You will then feel comfortable to roll this out yourself!

