



How Might We:

**Introduce capstones
across the university?**

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Overview

The University of Leeds belongs to a small group of Institutions globally that require all undergraduates, regardless of discipline, to undertake a major research project during their studies. A unique selling point that we do not actively market.

The Leeds Curriculum requirement is for this research project to be in the final year. A culmination of their studies, where learners bring together and apply knowledge and skills gained throughout their programme of study to a research project.

However, few go onto careers in research, many may leave their discipline all together. Therefore, there is a need to better prepare learners, through their undergraduate or masters projects, for the diversity of careers they go onto.

The solution is the Capstone project or experience, a proven high-impact educational practice which originated in the US ‘a culminating experience, where learners bring together knowledge and skills gained earlier in their programme and apply them to a problem, developing new knowledge and skills in creating a solutions or output for that problem.’

The focus or purpose of a capstone is learner personal and professional development, the development of skills and attributes unlike a traditional research project where the purpose is to gain research experience.

Recognising the benefits to learners, employers and wider society of capstones, the new University Student education strategy has broadened the Leeds Curriculum final year project requirement into a capstone project (Strategic Objective SE 1.4.2). More importantly, programmes must offer a portfolio of opportunities that can include traditional research projects.

Capstones are being progressively introduced into undergraduate and M-Level programmes across the University including in the Faculties of Biological Sciences, Engineering and Physical Sciences, and Arts, Humanities and Cultures. The School of Biomedical Sciences is a sector-leader in this

area. Learners will have the opportunity to undertake 16 different formats of capstone, all within the same module, for which they were recently awarded an Advance HE CATE award. Beyond Leeds, most UK Bioscience programmes have introduced a few capstone opportunities.

The Royal Society of Biology (Biosciences Accrediting Body) has changed its project accreditation criterion from a research project to the broader capstone project and allows all formats of capstone experience (see information section). UK institutions, particularly in STEM disciplines, are starting to implement capstones, including one Russell Group university that is making it, like Leeds, an institutional requirement, for all disciplines.

Capstones are an opportunity for us to provide an inspirational educational experience for our learners, to enhance their employability, and for the University to be a sector-leader in this area of curriculum provision.



Student voice

The message from learners, regardless of discipline, is crystal-clear and unambiguous. They overwhelmingly want capstones, and more importantly, a portfolio of capstone opportunities to be available to them. Ninety-four percent of 2021 UK Bioscience graduates surveyed wanted capstones within their programmes.

Similar surveys in both STEM and non-STEM programmes across the University of Leeds demonstrated the same demand. Why? Because they recognise the opportunity to enhance their employability, to make them more workplace ready.

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“Anything that is more likely to represent projects/tasks in the workplace would be very helpful. Also, the more choice the better”.

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Critical for learner buy-in and engagement is to market capstones as opportunities for personal and professional development, the development of key skills and graduate attributes, and preparation for the workplace rather than opportunities to gain research experience. By giving them ownership and responsibility for their learning and personal development, and offering a portfolio of opportunities, each of which provides different work experiences and skills/attributes development, learners can select the opportunity that best addresses their individual developmental needs and/or future career intentions.





How might we...

Do not do it in isolation. Collaborate with colleagues with different expertise and skills. Involve your learners; you will be amazed at their creativity and enthusiasm. Form learning partnerships with learners and colleagues, working collaboratively to progressively co-create new formats of capstones. For the first few years of a new format, view it as developmental, with learners both undertaking their capstone, and, at the same time, also co-creating with you the opportunity, the guidance, assessment etc. It is not going to be perfect first time- work with your learners to evaluate and progressively improve your opportunities.

To fully realise the transformative (massive uplift in skills/attributes) and translational (preparation for the workplace) of capstones, we, as educators need to think big in our capstone design. In the workplace, most activities are interdisciplinary, task and team-based, and involve external partners or clients. Progressively engineer all of these into your portfolio- interdisciplinary and cross-Faculty opportunities, team-based (so they develop the skills that can only be developed through team-working), teams addressing capstone briefs or tasks rather than defined projects, so they develop project design skills, working with or for clients such as community organisations, NGO's, industry, SME's.

There is the opportunity include other elements of Curriculum Redefined including social justice opportunities (projects with or for the community), education for sustainable development and trans-national educational opportunities (learners collaborating with learners in other countries, particularly the Global South, on the same capstone).

Rethink your assessments. Learners are unlikely to have to write a dissertation in their future careers. Instead, offer authentic assessments

that replicate tasks/activities in the workplace. For example: academic papers, technical or business reports, white papers, policy documents, portfolios.

More importantly, give learners the choice of primary assessment- the one best suited to their particular capstone format and which best showcases their knowledge, skills and attributes to potential employers, us as educators, and to themselves.

Capstones (including research projects) are high-stakes and high risk for learners. It is therefore critical to incorporate appropriate scaffolding and support, including resources, both during the capstone, but also in earlier elements of their programme- to de-risk them. This includes assessment approaches.

Similarly, there needs to be support for colleagues. This could take many forms including training workshops, development of How Might We guides (see information section for examples) and resources, sharing of expertise, mentoring of colleagues, and co-supervision of capstones. There is also a need to re-think attitudes and relationships- mentor and mentees rather than supervisor and student, with mentees being allowed to make mistakes and to learn from them. Teams rather than groups, with team planning, design and execution of the capstone, with team-ownership of the information and outputs (again replicating the workplace).

Finally, engage with external examiners and, where applicable, accrediting bodies, from the outset, both of whom may initially be conservative in approach. Sell them the concept, what you are trying to achieve, and the phenomenal collective benefits to learners, employers and society.

Practitioner based tips

In deciding what capstone opportunities to offer, start small, with one or two opportunities, progressively developing your programme, School or Faculty's portfolio. Think about what you do in your role- research, educational development, policy development, grant or report writing, public engagement etc. All of these, indeed any activity, can be a capstone.

- Think about your learners. What careers do they go onto?
- What tasks or activities do they undertake in these careers?
- Can you create capstones that provide the work experiences and develop the skills/attributes required for these careers?

Remember, whilst these activities may not be research traditionally undertaken in your discipline, they are research elsewhere in the University.



More information

1. Lewis DI (2020). **Choosing the Right Final Year Research, Honours or Capstone Project for you**. Skills, career pathways & what's involved. (Guide for learners)
2. Lewis DI (2020). **Final Year Research, Honours or Capstone Projects** in Biosciences "How to do it" guides (Guide for educators)
3. Lewis DI (2020). **Final Year research or Capstone projects**. Deliverable in Troubled times.
4. Royal Society of Biology (2020). **The Accreditation Handbook**.
5. Contact Dave Lewis (School of Biomedical Sciences), d.i.lewis@leeds.ac.uk

1-3 were created for the Biosciences but many of the capstone experiences described are applicable to all disciplines.

References

Lewis D.I. (2021) **The Capstone Experience: Implementing lessons learned from a pandemic educational environment to create inspirational real-world educational experiences.**

Lewis DI, Bean J, Beaudoin C, Van Zile-Tamsen C, von der Heidt T (2022). Preparing students for the Twenty-First Century workplace. In “Cultivating Capstones: Designing High-Quality Culminating Experiences for Student Learning”. Eds. Ketcham CJ, Weaver AG, Moore JL. Stylus Publishing & Elon University, USA. (In Press).

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Ketcham CJ, Weaver AG, Kinzie J, Moore JL (2021). **Elon Statement on Capstone Experiences.** Centre for Engaged Learning, Elon University, USA.

