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ABSTRACT

There is increasing pressure on business to contribute to solving global social and environmental challenges. Diversity can help companies better represent their stakeholders and find creative solutions to systemic challenges in partnership with others. Business schools play a key role in equipping leaders with key competencies for sustainability including systems thinking, collaboration and integrated problem solving. To do this effectively, business schools themselves need to be inclusive, not only to reduce inequalities, but to facilitate learning environments conducive to developing these competencies, and to bring together diverse talents with the shared purpose of creating value for society. We reflect on how to deliver interdisciplinary and inclusive professional education for sustainability, informed by our experience of designing and running Cranfield's part-time MSc Sustainability. Iterating between our reflections, which draw on evidence from learners, faculty, staff and employers, and the prior literature, we develop a multi-level framework setting out how inclusive learning and teaching can be embedded at individual, course, institutional and societal level. Focusing on the needs of professionals helps attract learners who are representative of society, and who can create immediate positive impact through their organisations. Institutional enablers are critical to enhancing diversity through interdisciplinarity. Considering the societal level prompts educators to think about the societal context for, and impact of, their programmes. We highlight key lessons and best practice for future development of inclusive professional learning experiences at Cranfield and beyond.

Keywords: education for sustainability; professional education; inclusive education; diversity; competencies for sustainability

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INTRODUCTION

In the face of global social and environmental challenges, there is increasing pressure on business to be part of the solution (Edelman, 2022). According to the Future of the Corporation project, the purpose of business is "to profitably solve problems of people and planet, and not profit from causing problems" (The British Academy, 2019). This means managers must respond to the changing needs and expectations of a wider set of organisational stakeholders (Maak and Pless, 2006), in the context of a volatile, uncertain, complex and ambiguous environment. They need to lead their organisations in ways that contribute to solving society's challenges and play their part—in their value chains, communities, industry sector and wider society—in achieving systems change.

To do this, businesses need to be more diverse and inclusive. Diversity in cognition, knowledge, expertise, and perspectives are critical for creating the necessary and urgent solutions to the societal challenges we face as a global community. As well as considering diversity of employees, businesses need to empower their people to look outside the organisation to how others in their industry sector are responding to sustainability challenges, and to collaborate with competitors, suppliers, and other societal actors to address systemic challenges. However, most organisations tend not to be very good at looking outside their organisational boundaries to tackle problems that are not within their direct control, or that require partnership and collaboration to solve. They tend to find it difficult to adopt measures of success beyond profit. Many professionals do not have the skills to make this complex and unchartered journey towards more sustainable business practices (Hall and Rowland, 2016; Stoten, 2021).

Business schools can play a pivotal role—particularly at postgraduate level, where many mid-career professionals return to study (Dzimińska, Fijalkowska and Sulkowski, 2020)—by offering sustainability education that equips leaders with the competencies they need to transform management practices and lead their organisations towards a more sustainable future. This includes contributing to achieving the 2030 Sustainable Development Goals (SDGs) and the Paris agreement's commitment to Net Zero by 2050, as well responding to an ever-expanding set of sustainability-related regulations and reporting frameworks. We need leaders across all functions of business who are capable of working collaboratively to address complex sustainability challenges (Burns, Diamond-Vaught and Bauman, 2015).

To meet these needs, business schools themselves need to be more inclusive, not only to help to combat discrimination and reduce inequalities, but also to train and integrate multiple talents (Misra and McMahon, 2006) and equip learners to create added value in organizations and in wider society (Jaeck et al., 2023).

There is consensus emerging on the competencies for sustainability that business schools should teach. Advance HE/QAA (2021) set out eight key competencies for sustainability, which themselves build on Wiek, Withycombe and Redman's (2011) synthesis of the knowledge, skills, and attitudes necessary to tackle real-world sustainability challenges and opportunities in businesses. These are: systems thinking; anticipatory competence; critical thinking; normative competence; strategic competence; collaboration; integrated problem-solving; self-awareness and normative competence (Box 1). Developing these competences demands "relational learning and a questioning and evolution of people's values and belief systems, best taught though holistic, transformational learning approaches" (Advance HE/QAA, 2021, p. 8).

In March 2022, Cranfield University launched a 2 ½ year part-time MSc Sustainability, designed to equip learners with work-based skills and competencies they can apply in practice to achieve more sustainable organisations. The course aligns with the Institute for

Apprenticeships and Technical Education's master's level Sustainability Business Specialist apprenticeship standard (Institute for Apprenticeships and Technical Education, 2023). The course develops sustainability competencies through an inclusive and diverse teaching and learning environment, recognising that this is a critical enabler of sustainability competency development. Since launch, the course has attracted over 150 learners who are diverse across multiple dimensions: over half are female; ages range from 22 to 55, with levels of workplace experience ranging from two to over 20 years; learners come from diverse disciplines (from engineering to finance), with different levels of prior education; they work in private, non-profit and government organisations in sectors from defence to social housing.

The course makes learning inclusive and accessible by delivering teaching live online every other Friday, complemented by annual residentials. The online, part-time nature of the course, and eligibility for apprenticeship-levy funding widens participation by making masters-level study possible for many who may not typically have been able to access, afford, or take time out to pursue postgraduate study, including those with parenting or caring responsibilities. Learners work in collaboration with others in diverse learning sets to help them relate learning to their specific needs and challenges at work. We use an 'unconference' format to facilitate open discussion between self-organising groups; a course-wide LinkedIn group enables ongoing sharing of best practice and challenges alike. We create space in the curriculum for peer learning, encouraging learners to learn about, and from, each other, as well as from the course faculty.

Diversity in teaching is enhanced by bridging disciplinary silos to harness the diversity of expertise and experience of faculty from the School of Management and the School of Water, Energy and Environment. It is the first ever Cranfield University course to be co-owned and co-delivered by two schools, fostering collaboration between diverse faculty to bridge knowledge gaps, share resources and leverage different perspectives to create a wider understanding of sustainability challenges and solutions. The subject of diversity, equality and inclusion itself forms an integral part of the course curriculum, bridging the SDGs to champion a symbiotic view of sustainability in both learning activities and organisational practice, e.g. social equity, workplace diversity and inclusion, economic prosperity and long-term environmental health & well-being. This integrated view of sustainability contextualises and extends the knowledge, skills and behaviours set out in the apprenticeship standard that relate to diversity and inclusion (Box 2).

The course adopts a work-based approach to learning, focusing on skills development as well as knowledge acquisition and incorporating multiple opportunities to apply acquired skills and knowledge in the workplace (Hughes and Saieva, 2021). Diversity of learners, coupled with teachers from diverse disciplines, enables learners to develop a deeper understanding of themselves, their organisational stakeholders, and the wider system beyond the boundaries of the organisation and its supply chain. We adopt a 'scholarship of practice' approach (Ramsey, 2014), emphasising the relationship between ideas and action, and helping learners to bridge between classroom learning and its practical application. Faculty are 'facilitators of learning', helping learners to make sense of what they do at work, and offering sustainability concepts, tools and frameworks which they can apply to solve organisational challenges. Our pedagogical practice is therefore driven by, and embraces, notions of "professionalism" (Shulman, 2000) and "learning for work" (Segraves et al., 1996).

In this chapter, we share our reflections on how we have fostered an interdisciplinary and inclusive professional learning experience on the MSc Sustainability, as well as the barriers and challenges to inclusive practice we still face. Building on prior literature on embedding equality, diversity and inclusion into sustainability education, we develop a multi-level framework for inclusive teaching and learning, illustrating each element of this framework with

our own reflections, based on institutional, staff and learner perspectives. We anticipate that this framework, along with our practical recommendations, will help other educators to develop inclusive programmes that equip professional learners with the competencies they need to address sustainability challenges and opportunities for business.

RESEARCH METHODS

We employed a combination of action research, professional enquiry and self-assessment, aligned with 'reflective practice' (Finlay, 2008, Loughran, 2002), to critically examine the successes and challenges of Cranfield's MSc Sustainability programme in a dynamic higher education environment. We take a holistic view of the learning experience and outcomes, including institutional, staff and learner perspectives, to contextualise our reflections and to highlight key lessons and best practices for future development of inclusive professional learning experiences at Cranfield and beyond.

Taking a reflective approach, we examined the successes and challenges of work-based learning, relying on multiple perspectives to reflect on, learn from, and adapt practice (Loughran, 2002; Brookfield, 1995). Our reflection was guided by the following questions:

1. ***How we design and teach the course.*** We examined our conceptualisation of 'professional learning' and critically reviewed our teaching practice at individual, course, and institutional levels. We reviewed our assumptions about work-based learning, looking at how our students responded to the curricula and assessments, and engaged in learning both within the virtual classroom and in the workplace.
2. ***How our teaching improves professional practice.*** We reviewed external influences on practice, looking at how our practice is impacted by external factors, both within and outside of the institution, that might affect the diversity, equality and inclusivity of the learning environment.
3. ***What actions to take to adapt our delivery.*** We drew insights and lessons by critically reviewing how we teach, through reflections on staff and student experiences, and by incorporating pedagogical theory and research to gain new insights into inclusive teaching and learning, building on Major's (2016) discourse on delivering work-based learning through a distance learning programme.

We critically reviewed our practice, comparing a wide range of evidence from learners, employers, staff and external organisations within both the public and private sector including:

- module and course-level feedback discussions and survey forms;
- stories / personal narratives that reflect the apprentices' learning experience.

We supplemented this evidence with reflections on the curriculum, wider sustainability skills and competencies needed, and the support environment created by drawing on the following sources:

- The authors' personal experiences in building the case for, validating, designing, launching and running the course;
- Minutes from meetings with the wider course team, and insights from informal discussion with course faculty and staff;
- Learner feedback including module feedback surveys; residential feedback surveys; transcripts from student feedback webinars;
- Input and feedback from organisations who supported the co-creation of the course, and/or who sponsor learners on the course.

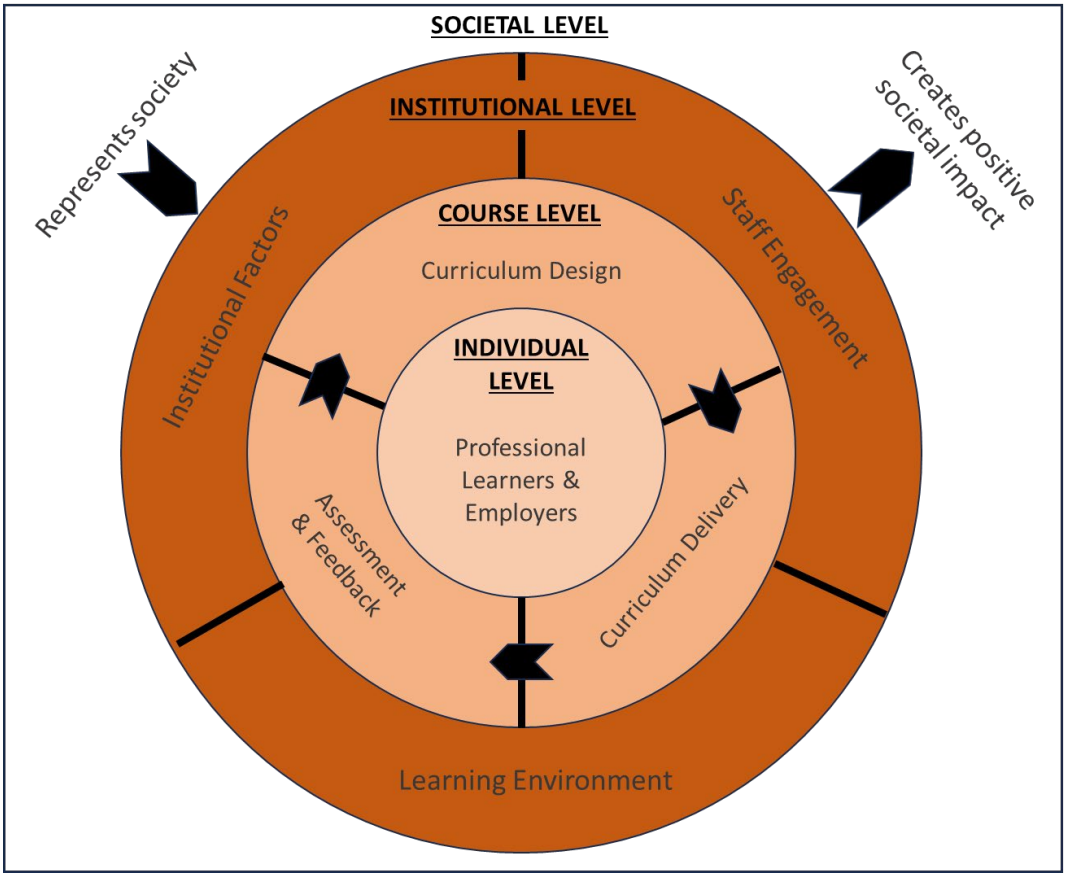
As 'reflective practitioners' we reviewed the evidence and relevant literature, considering staff and students experiences of teaching and learning, to identify enablers and barriers existing across the programme. Our analysis, guided by reflective practice (Loughran, 2002; Brookfield, 1995), considers changes to pedagogical practice and the support structures that

needed to be adapted to develop an interdisciplinary and inclusive professional learning experience. Our reflections on lessons learnt were informed by existing guidance on embedding equality, diversity and inclusion in the curriculum and the transformative learning literature. We iterated between our reflections (underpinned by evidence) and this prior literature to develop a multi-level framework for inclusive learning and teaching.

A MULTI-LEVEL FRAMEWORK FOR INCLUSIVE LEARNING AND TEACHING

Recent literature suggests that achieving inclusion in business schools involves engagement with a wide range of stakeholders including faculty, administrative staff, business and institutional partners and communities (Jaeck et al., 2023). Similarly, practitioner guidance suggests that embedding equality, diversity and inclusion in higher education programmes extends beyond the curriculum to staff engagement and learning environments (Advance HE). Transformative learning theories (e.g., Mezirow, 1996) suggest that 'collaborative work-based learning' is central to making learning more meaningful and to shape behaviour and change practice. Iterating between our reflections and this prior literature, we develop a multi-level framework to conceptualise how inclusive learning and teaching can be embedded at individual, course, institutional and societal level (Figure 1). We place the professional learner, together with their employer, at the centre of the framework. We add a new category of enablers to the prior literature, highlighting the importance of institutional factors that facilitate cross-disciplinary and interdisciplinary collaboration within HEIs as a means to champion diversity of both students and teachers. We further add a societal level to the framework, reflecting the need for programmes to not only attract diverse learners from wider society, but also to create positive societal impact. In the rest of this section, we set out how the framework is informed by our reflections on the MSc Sustainability.

Figure 1: A multi-level framework for inclusive teaching and learning (Authors)



Individual level

Our integrated work-based curriculum is centred around professional learning, where there is shared interest (between apprentice, employer and institution) in creating a successful learning experience. This requires good collaboration between the employer and institution to adapt the learning environment and provide on-the-job support for apprentices. In planning teaching activities and course content, we prioritise building a learning community online, and dealing with learners' individual challenges including:

- Work pressure and time constraints;
- Unfamiliarity with academic context / conventions;
- Lack of academic writing skills, referencing and research experience;
- Varying levels of motivations and expectations of a masters-level apprenticeship;
- Limited academic credentials (e.g., formal degree) resulting in insufficient foundation for academic studies.

Cranfield's experience of delivering apprenticeship programmes has taught us that professional learners generally have greater restriction on their time so need information conveyed to them in 'bite-size' chunks or in small, sequential steps to aid quick processing. Some need orientation to the academic environment, and we provide academic writing and research skills workshops as part of their induction. Others need support in understanding how sustainability tools and approaches might be applied in the context of their work.

There are varying levels of motivations and expectations of a masters-level course, so we set out the value of 'learning for work' early in the course. We recognise learners' different values, ethics and approaches to learning, and learners benefit from a supportive and inclusive learning environment. We encourage peer collaboration and support through 'active learning sets' that offer a 'safe space' to discuss challenging course content, discuss workplace challenges, and collectively learn how to navigate the learning experience, sharing what works well for success in both the classroom and work.

Although work-based learning is led by the higher education institution, there are shared responsibilities with the employer. We allocate designated apprenticeship tutors to support learners in navigating the process of 'learning for work'. Tutors arrange tripartite meetings with the apprentice and employer at 12-week intervals across the programme. These meetings offer regular 'check points' and a platform for ongoing employer engagement, as well as an opportunity to reinforce the value of on-the-job support and to pin-point specific actions required for busy line managers. Records of tripartite meetings confirm high employer engagement in the course and a strong interest in mentoring apprentices, recognising the value of the sustainability skills and competencies they bring to the workplace (Box 3).

Course level

We adopt a highly collaborative approach to course design and delivery to achieve an interdisciplinary learning experience which meets the needs of our diverse professional learners, and the expectations of their employers. Interdisciplinarity, coupled with diversity of both teachers and learners, helps learners to develop key sustainability competencies as outlined in Box 1. It offers alternative lenses through which to view some of the most systemic sustainability problems, as well as different perspectives on how to try to solve them, therefore enabling *integrated problem solving*. It also helps learners develop a deeper understanding of themselves (*self-awareness, normative competency*) their organisational stakeholders, and

the wider system beyond the boundaries of the organisation and its supply chain (*systems thinking and collaboration*).

Curriculum design

Our approach to course design draws on principles of interdisciplinarity, and co-creation with key stakeholders including learners and their employers.

Interdisciplinarity. Curriculum design was led by two academics with diverse backgrounds and expertise, one from the School of Management and the other from the School of Water, Energy and the Environment. They both aspired to integrate the best research and teaching from both a management and technical perspective, to offer participants a dual lens through which to view some of the most systemic sustainability problems, and different perspectives on how to try to solve them. Both share a passion for research-informed teaching that can be applied to practice to create positive impact in organisations through the upskilling of their leaders. Academics from both schools, leading the 14 taught modules, were actively involved in curriculum design. Seven modules were new or significantly adapted for this course, giving module leaders the opportunity to innovate, bringing their own diverse expertise, experience, and passions into the module design. For example, the Circular Innovation module includes a session on philosophy, allowing learners to critically reflect on the paradigms underpinning our thinking about the modern economy.

Co-creation with employers. The apprenticeship standard itself was developed with input from a 'trailblazer group' of 11 employers. We extended this principle by co-creating the course with input from a range of organisations including professional bodies (e.g., Institute of Environmental Management and Assessment) and 60 organisations (e.g. Severn Trent, Central Bedfordshire Council, Unilever) who provided feedback on the relevance and appeal of the proposed course. A co-creation workshop was held with representatives from eight businesses, local councils and professional bodies, with their feedback and ideas significantly influencing the ultimate course design.

Co-creation with learners. The final taught module is designed with input from the learners themselves, via an online workshop session led by the module leader six months before the module runs. This 'capstone' module gives learners space to reflect on and share the impact their learning has had to date on them individually and in their organisations, but also to voice and address the challenges and barriers they still face as well as any perceived gaps in learning or unanswered questions.

Curriculum Delivery

The course aligns with Cranfield's core teaching approach of translating research into frameworks and insights that can be applied in the workplace, for example through case studies, examples and discussions. We employ research-based principles of instruction (Rosenshine, 2012, Ingle, 2021) to do this, including:

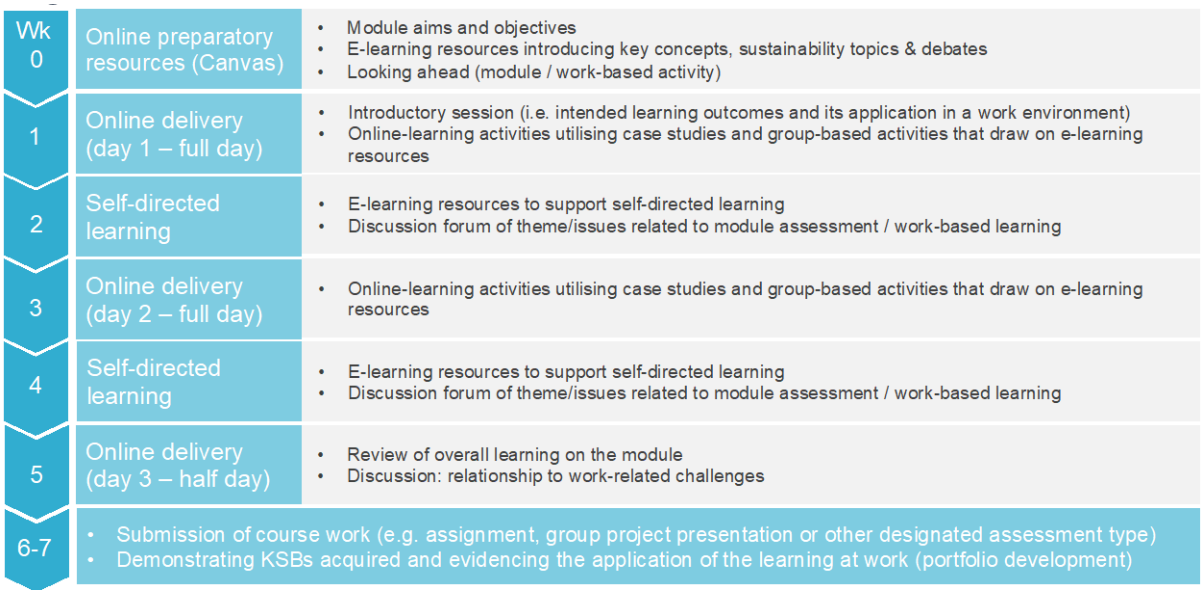
- *Review / reflection / questioning*. Using class discussions and review activities in small groups to reflect on prior learning, identifying misunderstandings and gaps, and opportunities for reinforcement (i.e., strengthening connections with content in subsequent sessions and modules).
- *Use of models / frameworks.* Using models that provide scaffolding for new and/or complex topics, often introduced before a live session (e.g., using an instructional video), then worked through step-by-step using worked examples, before being applied by learners to their own real-life scenarios, often using online collaboration tools such as Miro.
- *Checking learning*. Incorporating discussion-based sessions where students brainstorm and present ideas around a sustainability challenge and get constructive

feedback from the tutor and their peers, challenging thinking and broadening opinions and perspectives from which issues are discussed.

We encourage peer-to-peer learning through an exchange of experiences and interests in class discussions or self-reflection in groups, including through using the flipped classroom instructional strategy (Nouri, 2016). Learners are allocated to two groups for group-based activities and assessments: 'Action Learning Sets' bring together diverse learners from different industry sectors, ages, genders, as well as backgrounds (engineering/technical versus management); 'Sector Groups' are comprised of learners from the same, or similar, industry sector and are useful when learners are considering shared challenges, or exploring systemic solutions for their sector. The course has a significant emphasis on group work as a way to support the development of sustainability competencies including *collaboration* and *critical thinking* (Box 1). Some conflict has arisen within learning groups, but by supporting the process of resolution (e.g., online collaboration, managing competing priorities and sharing knowledge and resources), and modelling how these strategies can be carried into the workplace, learners have reflected on the positive learning they can apply back in their own teams and organisations.

To improve access to learning, the course represents a significant departure from other part-time masters-level programmes, in terms of the structure and mode of delivery. Significant innovation was required to translate our applied approach to learning into this predominantly remote and 'little and often' learning experience. Part-time apprenticeship programmes at Cranfield are typically delivered in person, with an intensive period of two or three teaching days on campus every month, often including a Saturday. By contrast, this course is primarily delivered online to: a) facilitate a 'little and often' teaching rhythm that fits around learners' jobs, lives and caring responsibilities, and b) reduce the carbon emissions associated with the course. The spacing of the live teaching is designed to give time for learners to assimilate and reflect on their learning and its workplace application, using a blend of live synchronous teaching, and asynchronous self-paced learning (Figure 2).

Figure 2: Module structure



Teaching materials and technology-enhanced learning. A diverse range of digital tools and teaching materials are employed by module leaders to make learning more accessible and engaging for professional learners and to cater for different learning styles and levels of engagement. These include interactive glossaries, images, videos, case studies, simulations

and games (see examples in Box 4). Further suggestions from learners are being considered, for example, using audio-only materials (e.g., podcasts) which can be accessed when travelling or walking. Asynchronous learning includes discussion boards to comment on pre-learning resources, share ideas and ask questions on module material. Synchronous learning utilises live polls, quizzes and Q&A sessions to check learning and encourage a wider range of learners to engage and contribute. Although attendance at live teaching sessions is compulsory (except in exceptional circumstances), recordings of sessions are available for learners who benefit from reviewing these, for example those with learning difficulties or with English as a second language.

Assessment

Course assessment considers the characteristics of our learners, teaching techniques used and intended learning outcomes (Narciss and Huth, 2004). We consider the application of learning, providing regular check points for self-reflection, peer and tutor review and continuous (and forward-looking) feedback along the learner journey to help learners to transfer their learning to the work environment (Hattie and Yates, 2014, Hattie and Gan, 2011). We adopt a programme-level approach to assessment, which includes a wide range of formative and summative assessment types requiring different analysis and communication approaches. Formative assessments include group presentations with faculty and peer feedback; applying a framework, posting the results on a discussion board for comment from faculty and peers; completing a quiz; reviewing and reflecting on a case study. Summative assessments include reflective reports; client briefing documents; innovation proposals; a risk assessment; a cost-benefit analysis; creation of a video/podcast and development of future scenarios. Learners reflect that some forms of assessment ‘play to their strengths’ and ‘come more naturally to them’, while others offer the opportunity to practice unfamiliar techniques which they can then apply effectively in the workplace.

As each summative assessment is due three weeks after the final teaching session, learners value clarity on the constructive alignment (Biggs, 1999) between taught sessions, learning activities, formative assessments and their summative assessment. Over half of module assessments evaluate the application on learning to learners’ own organisations. The course culminates with a 60-credit work or practice-based thesis which offers a valuable opportunity for learners to address a sustainability-related challenge or opportunity for their organisation.

Feedback

Seeking and responding to learner feedback is at the heart of faculty’s reflective practice, and we have a deep respect for the knowledge, experience and insights our professional learners can bring to the continuous improvement of the course and the learning experience. Learners provide feedback via an online survey after each module. We run annual course feedback webinars with each cohort, where learners can offer and discuss feedback verbally or via the chat function. After each of these sessions the course team collate feedback and our responses/actions, sharing this in a timely way with learners and the course team. Each residential also offers opportunities for more ad-hoc feedback to the course team, as well as a feedback survey after each residential. Learners meets their tutor at least once a quarter, with insights from these individual conversations augmenting formal feedback mechanisms.

A bi-monthly course team meeting, involving course directors, faculty, apprenticeship tutors and student and academic support teams, reviews and discusses all forms of student feedback. This has proved invaluable for facilitating the sharing of experiences, feedback and best practice between module leaders, as well as helping to create a sense of shared ownership for the student experience. In addition, an annual module review conducted by course directors with each module leader provides an opportunity to discuss feedback and agree changes or improvements.

Institutional level

The apprenticeship model widens participation and inclusivity in sustainability education, aligned to Cranfield's vision "To be valued globally for tackling the real-world issues of today to deliver a sustainable future." It also increases the diversity of learners and engagement with employers across numerous sectors. However, it involves adapting learning environments and institutional support systems oriented towards traditional taught master's programmes. Coupled with this, collaboration between schools, critical to the interdisciplinarity of this course, presents its own institutional challenges. The distinctive model for course delivery necessitates sustaining a remote learning community throughout long periods. To achieve this, we create an engaging online teaching and learning experience, run annual residentials that create and renew connection and energy, and build online community.

Institutional factors

Faculty and staff have had to reach across school silos to work productively with their counterparts, including in finance, admissions, marketing, library, student and academic support, as well as Directors of Education and Heads of Schools. This has helped break down silos between schools and form new connections which facilitate a more joined-up approach to sustainability across the University. Collaboration between schools was enabled by setting up the course finances on a net revenue share model, giving both schools a shared interest in attracting students and delivering a high-quality learning experience.

The demands from multiple employers, the need to track the development of learner knowledge, skills and behaviours and other administrative support, require coordination by our dedicated apprenticeship team, whose support is critical to the success of the course. In addition, each apprentice is allocated a tutor who supports them throughout their apprenticeship journey, helping them to gather the evidence they need to demonstrate their acquisition of the required knowledge, skills and behaviours. The course team supported the process of setting up an independent pan-university End Point Assessment Organisation and the development a handbook for staff and students on the assessment criteria and process.

Learning environment

Key elements of the learning environment are the live and self-paced online environments, the annual on-campus residentials and the ongoing cross-cohort learning community.

Online teaching and learning. All live teaching is delivered from our broadcast studio (Images 1 and 2). The studio provides cutting-edge technical facilities to enable inclusive teaching by faculty, streaming teaching in high definition on a high specification Zoom platform, managing the set up and use of Zoom 'breakout rooms', bringing in remote guest speakers, integrating teaching tools such as interactive white boards, and enabling the integration of online survey and collaboration tools seamlessly into the learning environment. The Studio Director 'co-presents' live teaching sessions, providing continuity between modules, and ensuring that learners can actively engage in their learning. He ensures learners can interact verbally, or through the 'chat' function, bringing comments and questions to the attention of the lecturer if needed, as well checking understanding on instructions for breakout activities and prompting faculty to adhere to planned break times.

The self-paced online learning environment is supported by technology-enhanced learning teams who work with faculty to create digital assets and environments that help learners engage with their learning in an accessible, often 'bite-size' way. They also ensure that the Virtual Learning Environment has consistent architecture and a familiar look and feel for each module, allowing learners to navigate the materials more effectively.

Residentials. The annual residential is a crucial part of the learning environment, providing a much-needed opportunity for learners to meet and get to know, or reconnect, with their peers and the course team in person at the start of each year. Residentials for each annual intake run concurrently, offering interaction between cohorts. Activities at the residential are designed to encourage connections between learners in and between cohorts. For example, learners pair up to learn more about each other's motivations and aspirations and discuss how they can support each other. In the 'Unconference' at the second residential, learners propose discussion topics of their choice and form self-organising groups to explore these. The Personal Leadership for Sustainability module is run across the first two residentials, as the personal nature of the learning, and the mutual understanding and respect for differences that it generates, works better in a face-to-face setting.

Building community. Outside the formal curriculum, learners build online learning communities. Some elements are student organised (e.g., WhatsApp groups), others are initiated by the course team, for example, a LinkedIn group where learners can share insights, and ask for information and support from course peers across all cohorts. This group includes a Padlet map where learners 'pin' their geographical location, helping to facilitate local meetups and networks. Learners are also integrated into university-wide sustainability-related activities, including the Cranfield Sustainability Network, an informal network of scholars, practitioners and students that hosts regular events on sustainability-related topics.

Staff engagement

A wide variety of internal and external stakeholders were brought into discussions to embed their diverse perspectives into the course design. This has continued into course delivery. Through regular course meetings, the course directors involve the wider course team in the evolution of the course, listening and responding to their suggestions on how we can positively harness the diversity of faculty expertise and perspectives to offer a learning experience that allows our diverse learners to flourish. Faculty and staff engage with learners at residentials, attending the course dinner and informal lunches, where the opportunity to meet them 'in real life' is always appreciated!

Societal level

The course is defined by a shared culture and mutual values related to making a positive societal impact as individuals and through the organisations we work in. A key objective of the course, and our approach to inclusive professional learning, is to equip learners with skills and confidence to use their personal agency to make a difference in their organisations and in the world. A key driver for involving employers as closely as possible in the apprenticeship is to gain wider organisational recognition of, and support for, our learners' efforts to drive positive societal impact.

At residentials, learners can volunteer to share their 'impact stories' with their peers, and with employers who attend the session. These presentations articulate how learners have applied their learning to bring about improvement and innovations in their workplaces, and even in their wider industry sector. As pre-work for their final taught module, learners are tasked with submitting a reflection on how their participation on the course is already enabling them to have positive impact in their organisation, before defining the biggest barriers / challenges they still face, with the module content designed to help tackle those remaining barriers.

A doctoral research project to rigorously evaluate the impact that this apprenticeship has on individuals and their organisations commenced in September 2023.

Barriers and challenges to inclusive practice

We recognise that we do not adequately accommodate all types of diversity. We need to adapt learning experiences for neurodiverse learners, based on feedback that, for example, intense and busy residentials can be overwhelming. Similarly, further support may be needed to accommodate the many introverts on the course (as evidenced by MBTI evaluations), particularly in the context of online group work and assessments. We also need to consider the needs of international learners (e.g., operating in time zones, cultural challenges) as we widen participation and engagement in the course.

With respect to learning sets, finding the right balance of diversity (e.g., demographic profile, career stage or experience, discipline, sector representativeness) is challenging, but important to achieve 'equitable learning' in mixed groups. We are still reflecting on and improving how to best configure these groups. In the first cohort, conflicts arose in groups where less experienced professionals were placed in teams with those with higher levels of experience, so career stage and length of experience is now considered when constructing learning sets. Although learners generally value the self and peer learning derived through group work, they find it challenging to coordinate time to work together given competing work priorities and schedules. We are trying to ease this time pressure by not scheduling group-based summative assessments over holiday periods and avoiding consecutive group-based assessments.

Feedback from learners and apprenticeship tutors suggest that some employers still struggle to understand their responsibility for apprenticeship support. This aligns with prior experiences of degree apprenticeships that suggest employer engagement can be intermittent, plagued by concerns about the level of commitment and its impact on costs and resources (Rowe et al., 2017). To help employers feel positively engaged in their employees' learning experience, we introduced employer participation in residentials, where they can share experiences of learner impact at work and navigate challenges. We are seeking other ways to maintain an ongoing relationship with employer sponsors, providing opportunities to shape work-based learning activities and assessments and deliver additional 'on-the-job' support and guidance to apprentices to improve learner success.

As well as presenting huge benefits, the diversity of faculty involved in the course also has its challenges. For all faculty, adapting to 'little and often' remote delivery has required adaptation and a significant investment of time in modifying teaching approaches and materials. For faculty with less experience of teaching part-time professional students, there is a steep learning curve in terms of understanding how learners want to apply theory to their own practice, as well as the importance of timely access to materials and feedback. However, the positive outcome is the development of empowered and upskilled faculty across both schools, capable of delivering high quality professional learning. The ongoing objective for the course team is to ensure consistency of student experience across modules, without losing the rich diversity faculty members bring in terms of the knowledge and experience.

When it comes to module assessment, student feedback suggests learners prefer assessments which can be applied to their own workplace, as these have more direct and immediate practical use. However, the evaluation of some module learning outcomes are better suited to, for example, comparative assessment of learners' application of a method to a common case study. Also, assessment can be more onerous for markers when each submission is unique to the learners' context. At the same time, student feedback indicates a need to provide adequate alternatives to workplace-based assessments to cater for learners' diverse organisational contexts, for example where data access is an issue (e.g., defence sector), or in smaller companies when the opportunities for application are constrained, offering a case organisation as an alternative.

One unforeseen consequence of empowering students to co-create their learning experience and encouraging a culture of open feedback has been some instances of module-level feedback where students have made personal, and potentially hurtful, comments about individual faculty members' style and approach to teaching. We have responded to this through a cross-cohort communication setting the ground rules for fair, constructive two-way feedback between learners and teachers.

We have not achieved cross cohort collaboration to the extent that we would like to. Although students across cohorts can connect individually through the closed LinkedIn group, few are doing this. When course directors specifically introduce learners, who work in the same sector or have similar roles, to each other, productive conversations and peer learning typically occurs. We therefore plan to create further time and space at residentials for learners to connect with new people (e.g., across cohort through 'speed dating').

Finally, bridging across institutional silos continues to require ongoing investment in relationships as well as innovation in structures and processes. Sometimes it can feel like we are continuously 'breaking the rules' to enable a positive and diverse learning experience. The cultural differences in teaching and learning strategies and the approach to assessments are areas we are working to align but requires ongoing adjustments to pedagogical practices and cultural norms and behaviours within schools.

IMPLICATIONS FOR INCLUSIVE PROFESSIONAL EDUCATION FOR SUSTAINABILITY

Through the lens of our multi-level framework, we demonstrate how creating an inclusive professional learning experience demands adaptation and innovation in pedagogic practice at the individual, course level and institutional level. We conceptualise interdisciplinarity as a key enabler of diversity in teaching and learning and set out the approaches we have used at course and institutional level to achieve interdisciplinarity across two distinct schools.

Key learnings, which we would offer as advice to others seeking to introduce a more inclusive approach to learning and teaching in business schools, are:

- Adapt pedagogic practice to the needs of individual learners in terms of their prior learning and experience, and their current professional context, with a focus on embracing and capitalising on diverse individuals' unique talents to bring added value to their organisations and wider society.
- Foster a common sense of purpose and belonging for all faculty, staff and students involved in the course, encouraging a culture of collaboration and innovation. Designing 'inwards' from an end purpose of positive societal impact and employer need creates a shared sense of purpose that can help overcome the challenges of working across contrasting cultures and institutional structures.
- Drive innovation where necessary at the institutional level to create learning environments, collaboration and relationships that enable inclusive professional learning, recognising that challenging the status quo can feel 'defeating' but requires patience and perseverance.

We strive to share widely the learning and best practice gained from our experience. Internally, our approach to cross-school collaboration and course co-design with employers is held up as an exemplar, including as a case study in training sessions on course design and validation. Our experience has influenced the design of other interdisciplinary apprenticeships, for example in the fields of soil and water management. Externally, our approach to co-creation with employers has been shared with Ofsted and we contributed our expertise in professional education for sustainability to a government Green Jobs Plan roundtable. Informally, we share

our course experience with other HEIs offering this apprenticeship who tell us they have adopted elements of our pedagogical practice.

Our chapter contributes to knowledge about inclusivity in learning and teaching by distinguishing the different levels (individual, course, institutional, societal) at which changes and innovation in pedagogical practice should be enacted to facilitate equality, diversity and inclusion. We introduce a new category of enablers, highlighting the importance of institutional factors to enable diversity through interdisciplinarity. We encourage educators to consider both the societal context for, and impact of, their programmes. In the context of education for sustainability, it is vital to 'practice what you preach' by enabling diverse and inclusive access to learning as well as minimising the environmental footprint of the course. We suggest an inclusive approach to teaching and learning, coupled with opportunities for professional learners to apply theory in their own management practice, not only offers opportunity to attract learners who are more representative of society, it is also a recipe for education that creates positive societal impact.

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Box 1: Competencies for sustainability

Items in bold italics are those particularly enabled by inclusive teaching and learning

	Competence[1]	A student who displays this competency can:
	Ways of thinking	
Subject knowledge and knowledge of all SDGs	Systems thinking	• ***recognise and understand relationships*** • analyse complex systems • consider how systems are embedded within different domains and scales • deal with uncertainty
	Anticipatory	• understand and evaluate multiple outcomes • create their own visions for the future • apply the precautionary principle[2] • assess the consequences of actions • deal with risks and changes
	Critical thinking	• ***question norms, practices and opinions*** • reflect on one's own values, perceptions and actions • take a position in the sustainable development discourse
	Ways of practicing	
	Strategic	• develop and implement innovative actions that further sustainable development at the local level and further afield
	Collaboration	• learn from others (including peers, and others inside and outside of their institution) • ***understand and respect the needs, perspectives and actions of others*** • ***deal with conflicts in a group*** • ***facilitate collaborative and participatory problem solving***
	Integrated problem-solving	• ***apply different problem-solving frameworks to complex sustainable development problems*** • ***develop viable, inclusive and equitable solutions*** • ***utilise appropriate competencies to solve problems***
	Ways of being	
	Self-awareness	• ***reflect on their own values, perceptions and actions*** • reflect on their own role in the local community and global society • continually evaluate and further motivate their actions • deal with their feelings and desires
	Normative competency	• ***understand and reflect on the norms and values that underlie one's actions*** • negotiate sustainable development values, principles • goals and targets, in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions

[1] Based on the AdvanceHE/QAA framework.

[2] A broad approach to innovations with potential for causing harm when extensive scientific knowledge on the matter is lacking, emphasising caution, pausing and review.

Box 2: Sustainability Business Specialist Apprenticeship standard: Knowledge, skills and behaviours related to diversity and inclusion

Knowledge

K3: How different cultures, customs and business practices impact on how the organisation works on a global scale

K8: The principles of being the best "neighbour" in the local community taking into account issues such as emissions, engaging with the local community, road access

K15: Key principles which identify the "Ethical Business" and how to put it into practice

K17: How to communicate sustainability messages effectively internally at all levels of the organisation or externally to key stakeholders

K18: Transformational leadership and change management in areas such as creating a vision for the future, motivating and inspiring others to engage with the vision and coaching and mentoring others and building a team to achieve the vision

Skills

S7: Formulate and co-ordinate a business response on sustainability issues to internal and external stakeholders

S9: Identify, influence and manage key stakeholders across different business functions

S15: Lead the corporate social responsibility agenda for the organisation

Behaviours

B2: Integrity and respect: listens to others and seeks to build understanding; embraces the diversity of colleagues and makes complex issues easy for others to understand

B4: Personal effectiveness: demonstrates a high level of self-awareness and is emotionally intelligent; adapts behaviour easily dependent upon situation and impact to achieve desired result

B5: Influencing and negotiation: act as a subject matter expert to inspire others to achieve business goals; adapts language and communication medium to seek agreement; proactively communicates clearly, concisely and on a timely basis; is inventive about win-win options to gain majority consensus

B6: Ethical: demonstrates, and champions in others, a healthy respect for key moral principles that include honesty, fairness, equality, dignity, diversity and individual rights

Box 3: Learner and employer testimonial – BidcorpUK

It's made a huge impact on me and my work. My employer has been really delighted by the relevance of it because every assignment I've been able to apply to work and add value.

I stumbled into the official sustainability role when the previous head retired, and I had imposter syndrome. In my role, I'm the main source of sustainability expertise internally for all our employees, and externally for customers that want advice – from big corporations with sustainability departments to small customers who have no idea how to get started. It's important that I know what I'm talking about, and the master's has been hugely instrumental in knowing how to do that.

When I started in the role, I was trying to hit everything in the UN Sustainable Development Goals which is 17 goals. Rosina did a module on leading sustainable business which made me realise I need to do a materiality assessment and really look at how our business model is relevant to sustainability. The idea is to focus on less but to do more in that area. It's improved our prioritisation, and our whole strategy has then changed. Off the back of that I've been able to recruit roles that have increased the effectiveness of our team. The business is then seeing the value that we're delivering commercially too. I've been able to influence the board a lot more in terms of our principles and governance. We signed up as a supporter of the better business act, which is about greater obligation to people and planet, not just shareholders.

We had a module on evaluating sustainability, and it's been so relevant for engaging with customers who want to decarbonise their food supply chain. From this, I did a blog on the four challenges of carbon labelling on menus and doing a podcast with a student I met on the course. The network I've build on this course with fellow students and researchers has been invaluable to building my knowledge base. Overall, I'm able to add a lot more value to my employer in terms of our branding in the marketplace and feel like we're giving well-founded expertise to our customers."

Julie Oust – Head of Sustainability at Bidfood; Sustainability apprentice 2022-2024

The course has brought so many benefits to Bidfood; our customers have peace of mind that we are keeping up with latest developments and innovation in this area, and the knowledge that Julie has gained from the course has really helped us to provide thought leadership in key areas of food sustainability. Cranfield enables students to tailor their assignments around their own business priorities and context, so this has added value from the very first weeks.

Heather Angus - People and Sustainability Director at BidcorpUK

Box 4: Examples of innovative participatory learning interventions

The Cranfield Exploring Sustainable Futures game is played with learners in person at their first Residential. This role-playing game accelerates learning through an experiential, transformational journey to the future. It is designed to engage participants in system-thinking with a long-term perspective and to explore alternative pathways to a sustainable future by 2050. During the game, players representing established businesses interact with players representing entrepreneurs, policymakers, civil society organizations and citizens as they all react to changes in economy, technology, and society along alternative pathways towards a more sustainable future by 2050. The 'winners' are judged by the resources they have accumulated, and by whether they have achieved their purpose, with participants reflecting on the world they have collectively created. Through their role-play, players must try and embody the role of organisations that they might be unfamiliar with (e.g., a business person playing a policy-maker); they reflect on biases and barriers to sustainable action, both their own, and the assumed set adopted by them in their role; they question the meaning of success from a more diverse set of perspectives. Players work together in groups to share their interpretations of unfolding events and agree on actions which help them achieve their goals; groups of players representing different organisations find areas of shared interest and complementary resources to form collaborations that drive mutual value.

Blue Connection simulation. As part of the Sustainable and Circular Supply Chain module, learners take part in an innovative web-based business simulation game called 'The Blue Connection' created by game-based learning provider Inchainge. In response to the increased demand for companies to transform how they operate, fictional e-bike manufacturer, Blue Connection, has hired a new management team to transform the company's linear value chain to a circular one. Team members are confronted with diverse real-life dilemmas, where cross-functional understanding and collaboration are the key to success, as they work together to transition their business away from 'take-make-dispose' linear production towards a circular business model.

Image 1: The Course Directors teaching from the Cranfield studio



Image 2: A more informal studio setting useful for interviewing guest speakers





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