EDUCATION & TRAINING FOUNDATION

Leadership for ESD in the FE curriculum

A review of Education for Sustainable Development (ESD) approaches and curriculum content in post-16 qualifications in England

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CONTENTS

INTRODUCTION	**2**
Summary	3
What is ESD?	5
Context	6
Methodology	8
Recommendations	10
FINDINGS	**12**
Qualifications with ESD content	12
Examples of ESD content	14
ESD in pre-16 qualification	18
The providers	19
CASE STUDIES	**20**
APPENDICES	**44**
Appendix 1. Qualifications with broad ESD coverage	44
Appendix 2. Qualifications with partial ESD coverage	45
Appendix 3. Other qualifications containing a unit with some ESD coverage	48
References	49

INTRODUCTION

We face a range of interconnected global sustainability crises and there is no doubt that urgent action is needed on many fronts. Education and training need to play their part in promoting people's understanding of the challenges we face as well as developing the skills needed to address them.

This report was commissioned by the Education and Training Foundation (ETF) in order to establish:

- which qualifications available to post-16 learners in England are enhancing their awareness of sustainable development
- what proportion of learners have access to a broad education for sustainable development (ESD) curriculum as part of the qualifications in their study programme
- how educators and leaders from across the Further Education and Training (FE) sector are providing ESD
- how leaders in the FE sector can best support greater uptake of ESD within their organisation.

Readers unfamiliar with England's FE and Training sector may find it useful to review the ETF publication 'So what is the FE sector?' to help contextualise this report.

We know that many FE providers and colleagues are keen to play their part in educating for sustainable development and training for 'green' employment. However, we also know that they need support to be able to equip their learners with the knowledge and competencies needed to meet these goals.

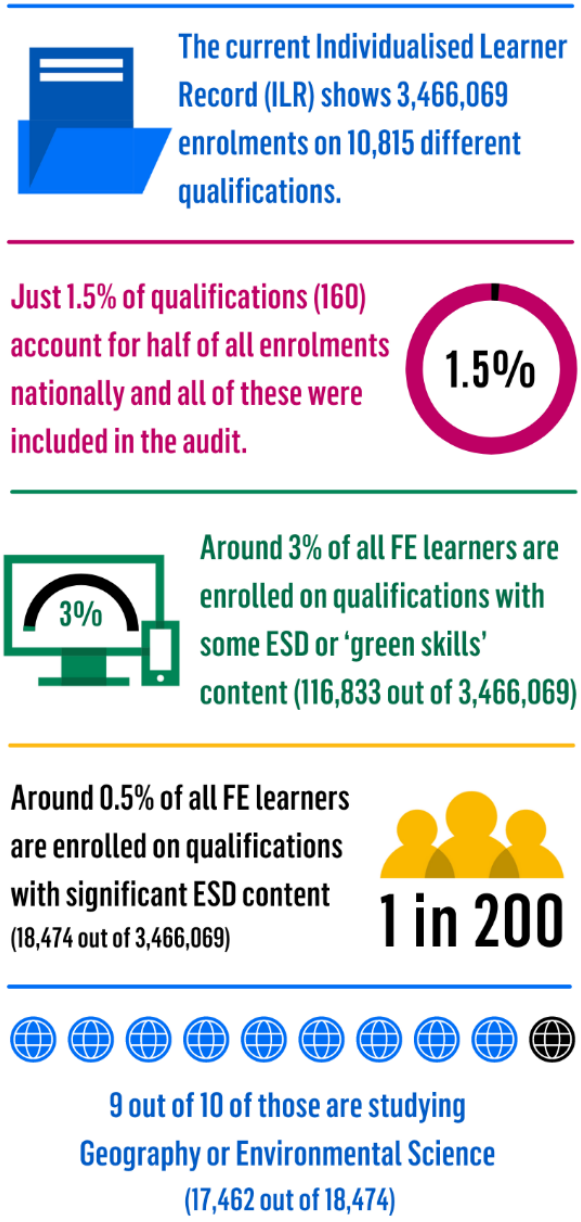
Earlier research undertaken by the ETF showed that the biggest barrier educators faced in bringing ESD to their learning and teaching was sustainability issues not being in their curriculum specifications. We wanted to better understand this barrier and identify who, how and where ESD was being brought to the FE experience for learners.

This will inform the development of ETF initiatives to help support the sector's adoption of education for sustainable development (ESD) to enhance teaching, learning, assessment and leadership, particularly support for curriculum and quality managers as well as organisational middle managers and leaders. We've chosen to publish data to enable our peers and partners to also benefit from these insights and to inform policy and decision makers as well as sector bodies about the current ESD landscape and how this could be improved.

1. Summary

This report is based on a qualification search, a curriculum audit and a number of case studies. Qualifications with ESD content are on a spectrum, with some having ESD as their core purpose and others having some reference to ESD or addressing particular 'green economy' skills. For the purposes of this report, qualifications, whether short or long, were categorised as having broad, partial or no coverage of ESD. Qualifications with **broad ESD coverage** address all the major

aspects of ESD including sustainability, climate change and the action needed to address it. Qualifications with **partial ESD coverage** only address some of these issues and this might include training for specific 'green' employment skills.



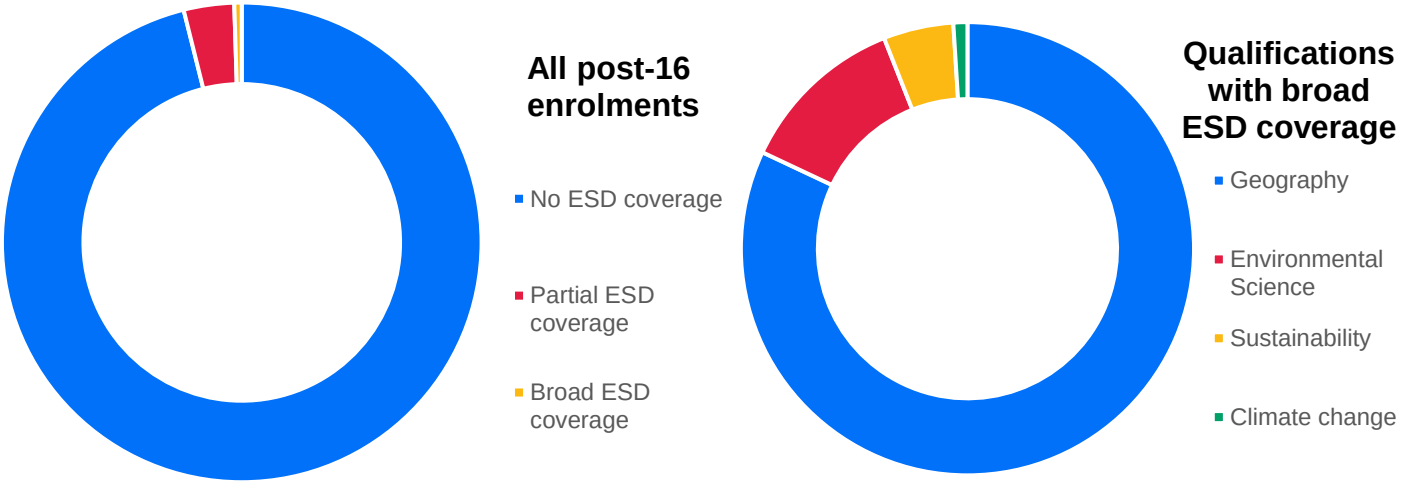
The key finding is that English post-16 education is a long way from offering all learners the knowledge and skills needed to promote sustainable development, with fewer than 1% of post-16 learners enrolled on qualifications with broad ESD content and only a few providers currently offering

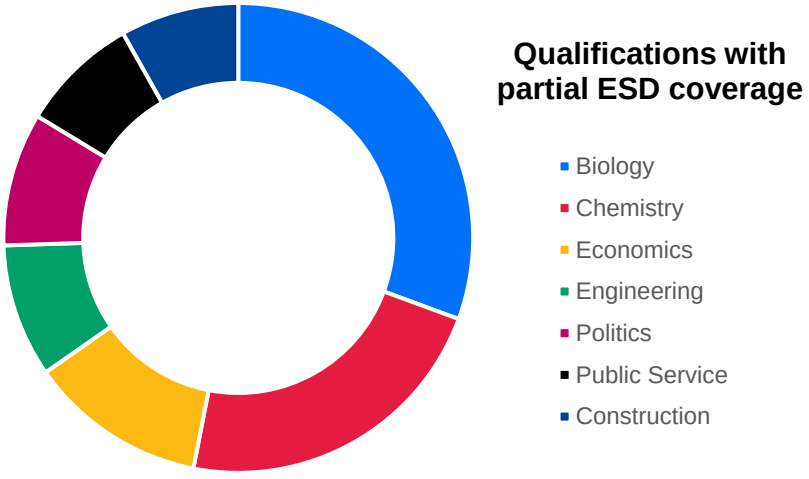
these opportunities.

- A very low proportion (0.5%) of post-16 enrolments are on qualifications with broad ESD coverage. This represents 18,474 post-16 enrolments on 11 qualifications out of a baseline total of 3,466,069 enrolments on 10,815 qualifications.

- Qualifications with partial ESD coverage represent a further 116,833 enrolments on 46 qualifications. This brings the total to 135,307 enrolments or 3.9% of all post-16 enrolments.

- The proportion of providers offering qualifications with broad ESD coverage is relatively low (the highest proportion for any single qualification is 62% of colleges offering A Level Geography).





The case studies showed that where sustainability in the curriculum is at its most effective, it is characterised by engagement with external community and corporate organisations which bring the learning to life. There are examples of this approach resulting in learners using their knowledge and understanding to positively influence sustainability within their communities, the workplace and the home. Many teachers see it as their responsibility to prepare their learners to be empowered and to eventually act as leaders, influencers and advocates for sustainability when they progress into the

workplace. There are too few discrete ESD qualifications available to teachers. As a result, they are finding and amplifying relevant content from within other qualifications to meet what they report as a burgeoning interest and commitment to the principles and practices around sustainable development amongst learners.

The recommendations suggest a range of approaches which could be adopted by leaders, educators, FE providers and sector bodies to ensure that the teaching of ESD reaches more post-16 learners, including the embedding of ESD into existing qualifications as well as developing and promoting qualifications with ESD at their core.

Implementing these recommendations would ensure that every post-16 learner has the opportunity to receive a good grounding in ESD and the proportion of learners enrolled on qualifications with ESD content in any single year would rise rapidly. Adopting these recommendations could help the English education system catch up with those of other countries and become a leading ESD provider.

2. What is Education for Sustainable Development (ESD)?

UNESCO defines ESD in the following terms:

"ESD empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning and is an integral part of quality education. ESD is holistic and transformational education which addresses learning content and outcomes, pedagogy and the learning environment. It achieves its purpose by transforming society." [1]

In this definition learning content includes critical global issues such as climate change, biodiversity, disaster risk reduction, and sustainable consumption and production. Learning outcomes include stimulating learning and promoting core competencies, such as critical and systemic thinking, collaborative decision-making, interdisciplinarity, the ability to bring about change, a connection to nature and taking responsibility for present and future generations.

The definition also suggests that pedagogy and learning environments should be interactive and learner-centred, encouraging exploratory, action-oriented, and transformative learning. Physical and virtual learning environments should inspire learners to act for sustainability and learners should be empowered to transform themselves and the society they live in.

This includes enabling the transition to greener economies and societies, equipping learners with skills for 'green jobs', motivating them to adopt sustainable lifestyles and empowering them to be 'global citizens' who engage and assume active roles, both locally and globally, to face and to resolve global challenges and ultimately to become proactive contributors to creating a more just, peaceful, tolerant, inclusive, secure and sustainable world.

A key UN goal is that by 2030, all learners acquire the knowledge and skills needed to promote sustainable development, support resilience and are future-proofed. sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development. This is part of the Sustainable Development Goals (SDGs) to which the UK, as well as 192 other countries have committed to achieving.

3. Context

a. Global context

This report is set in the context of the urgent global need for action to promote sustainability and education for sustainability at a time of global climate emergency, ecological crisis and social injustice.

In 2017, the UN General Assembly reaffirmed that ESD is an integral element of the Sustainable Development Goal on quality education, and a key enabler of all the other Sustainable Development Goals.[2] A key objective for member states is to fully integrate ESD and the 17 SDGs into policies, learning environments, capacity- building of educators, the empowerment and mobilization of young people and local level action.

World Economic Forum data suggests that the highest-demand skills in emerging and growing sectors span both technical and cross-functional skills.[3] The Organisation for Economic Co-operation and Development (OECD) has recently published a framework for learner outcomes, 'Learning Compass 2030' which identifies core foundations including literacy, numeracy, health and global competence and three 'transformative competencies' to shape the future: creating new value, reconciling tensions and dilemmas and taking responsibility.[4]

b. Current developments in the United Kingdom

As well as the UK government's commitment to delivering the SDGs, including SDG 4.7, by 2030, the Department for Education has identified several areas that it is working on, particularly relating to SDG4 (quality education) but also how education is contributing to the achievement of other sustainability goals too.[5]

The 10-point Plan for a Green Industrial Revolution was the biggest governmental sustainability commitment since the 2008 Climate Change Act and led to the establishment of the Green Jobs Taskforce to set the direction for the job market as we transition to a high-skill, low carbon economy. The taskforce's report includes recommendations to the sector, industry and government.[6]

In the run up to the 26th Conference of the Parties to the Paris Accord (the international climate change negotiations, COP 26), the UK government published a range of strategies setting out how it will reduce emissions in different sectors ranging from transport to the heating of buildings culminating in an overall net zero strategy. COP26 was a particularly important milestone as it is the largest international event the UK has ever hosted and offered an opportunity for the UK to position itself as a leader in this area. Despite this, the House of Commons Public Accounts Committee found in March 2021 that departments are not yet sufficiently considering the impact on net zero when taking forward projects and programmes.[7]

The Committee on Climate Change has challenged the Department for Education (DfE) to work with other government departments to reduce carbon emissions of the sector (including zero carbon buildings), using education to support the transition to a net-zero economy and ensuring a 'just transition' for workers transitioning from high-carbon to low-carbon or climate resilient jobs.[8] At COP26, the Department published its draft Climate Change and Sustainability strategy, outlining the vision for the UK to become "the world-leading education sector in sustainability and climate change by 2030" and outlining the actions planned to achieve this.[9]

The skills gap in relation to sustainability was identified over a decade ago and has been discussed

by various groups and stakeholders ever since. Numerous briefings from universities, think tanks, industry and trade bodies describe the economic benefits of transitioning to a sustainable economy, the skills gap, and the critical need for investment in training to enable that transition. A Aldersgate Group Policy briefing called for "sustainability and net zero delivery to be embedded across the whole education system and in training and lifelong learning".[10] The CBI report 'Skills and Training for the Green Economy' explores the key opportunities and challenges to providing both the skills and training needed to reach net-zero.[11]

The Institute for Apprenticeships and Technical Education (IFATE) has created a Green Apprenticeships Advisory Panel (GAAP) made up of employers and supported by other key voices in this area, to help ensure the right skills are in place for the future workforce to deliver the green technology shift the UK needs. The aim is to enhance current apprenticeships to ensure that they meet the needs of employers within the growing green economy and to create new apprenticeships which reflect new occupations to meet the challenge to reach net carbon zero. IFATE's new sustainability framework sets out the key themes for employers in all sectors to consider how every apprenticeship and technical qualification can contribute to climate change goals, although its use is advised rather than mandated.[12]

The final report of the Commission of the College of the Future envisioned colleges playing a central role "…as part of a skills-led recovery from the current recession, as we redress long-standing regional and social inequalities and as we move towards a sustainable, net-zero carbon economy supported by a green technology revolution".[13]

The work of the UK Climate Commission for FE and HE Leaders and Students supports providers to take the rapid action needed on all fronts. Some FE providers are aware of the scale of the transition needed and many have signed up to the Climate Action Roadmap for FE Colleges which was the first major sustainability publication for the FE sector in over a decade.[14]

The FE climate action roadmap curriculum recommendations include:

- Deliver 1-day carbon literacy training to all staff and students
- Participate in the Global Goals Teach In, an annual week-long campaign delivered by SOS to embed the sustainable development goals into their teaching for a week
- Audit the college curriculum against the SDGs using the Responsible Futures framework and accreditation
- Train all teaching staff in climate change/environmental issues and support them to incorporate the SDGs into the curriculum
- Embed sustainability in their curriculum and share the lessons with other staff and students.

Critical to the uptake of ESD will be the competence and capacity of education professionals. Research by the ETF shows that of the 830 people who work in the FE sector that were surveyed, 74% of educators and 63% of professional support staff feel they haven't received adequate training to educate pupils about climate change nor embed sustainability in their work.[15] The FE White Paper 'Skills for Jobs'[16] and the subsequent Skills Bill prioritise outstanding teaching, explicitly recognising that a focus on staff recruitment, retention, training and development is the key that unlocks excellence in the system.

Longitudinal data show that learner demand for ESD is strong – 91% say they agree their place of study should actively incorporate and promote sustainable development; 83% would like to see sustainable development actively incorporated and promoted through all courses; and 65% say sustainable development is something they would like to learn more about.[17] The emergence of

learner-led campaign Teach the Future and their asks relating to curriculum reform, educator training, net-zero buildings in the education system estate and the drafting of a new Climate Emergency Education Act further further shows learner demand.[18]

Despite this, current learner exposure to teaching on the most overtly sustainability-focused courses is reported as low in higher education, with fewer than 40% of higher education students saying they have experienced teaching on 'understanding how human activity is affecting nature', 'using resources efficiently to limit the impact on the environment and other people' or 'looking at global problems from the perspective of people from around the world' at any point in their education to date.[17]

The 2020 UK Climate Assembly 'The Path to Net Zero' concluded: "As well as there being a need for this to change in order to meet our net zero and other sustainability ambitions, the public and particularly learners believe the curriculum doesn't sufficiently address sustainability issues, and in particular climate change, and would like to see this change."[19]

Opinion polls also suggest that most people feel that the curriculum doesn't sufficiently address sustainability issues, and in particular climate change, and would like to see this change.[19]

4. Methodology

Different approaches were combined in the curriculum audit to identify qualifications with ESD content and to categorise that coverage as **broad** or **partial**. The approaches included the use of key descriptors in qualification titles and specifications and a search by sector skills areas and qualification specifications. The scope of qualifications included A-levels, GCSEs and vocational and technical qualifications, including those taken by apprentices and adults as well as the new T Levels. The ESD content of each qualification identified was characterised as **broad** (covering many aspects of ESD), **partial** (covering one aspect or limited aspects of ESD) or none.

This methodology relies on the wording of qualification specifications and may not capture all the opportunities for ESD in teaching contexts. We accept the limitations of this methodology but felt an understanding of where ESD content could be found was useful contextualisation, and the more qualitative case studies have helped develop a more nuanced narrative to compliment the fairly blunt tool of keyword searches.

The audit draws on the 2021/21 Individualised Learner Record (ILR) for English colleges, the Regulated Qualifications Framework, the most current DfE performance tables, DfE subject requirements and awarding organisation subject specifications to map ESD aims across all provision. Through these sources we were able to identify which qualifications are most used by learners within the FE system. We simply did not have the resources to review all qualifications so instead chose to focus on qualifications with higher enrolments; those accounting for over half of post-16 learners in England were all included for analysis. Other qualifications with lower enrolments but with a strong match to ESD, were also followed up and included. We recognise it is possible that some qualifications with partial ESD content and lower enrolments may have been overlooked.

The methodology for the case study collection was to sample as wide a range of provider and qualification types as possible. Interviews were undertaken with those leading on ESD within the curriculum at these providers.

There were three main qualitative inquiry lines behind the case studies. Firstly, to look at the work of

practitioners who are not delivering qualifications or constituent units with an explicitly sustainability related title. In this inquiry line the case studies sought to draw out what the drivers were for taking a leadership approach to ESD delivery.

The second line of inquiry was to look at those practitioners and curriculum managers who use a relevantly titled unit or module within a non-sustainable development titled qualification and how they relate this content and learning to the main qualification aim.

The third inquiry line focused on practitioners and curriculum managers who deliver specifically designed and titled sustainable development qualifications. In these cases, in addition to the drivers for offering this provision, the recruitment profile of the learners and progression goals are also explored.

The case studies explore leadership for ESD as well as the pedagogy associated with sustainability content including lesson plans and tasks and how practitioners engage with external agencies and partners. Importantly the case studies capture the impact the learning has had on learners, what the new learning was and how perceptions, knowledge and understanding may have shifted as a result.

The analysis of our findings is presented in a number of ways:

- Firstly we outline the audit findings, with key statistics given showing ESD descriptors within qualification titles and units (sections 7.1 and 7.2 respectively)
- Then we look at ESD related qualifications (section 7.3) and ESD content within high enrolment qualifications (section 7.4).
- Where ESD was found, we then present a narrative outlining this content where both broad and partial coverage was found (sections 8.1 and 8.2 respectively)
- We also reviewed ESD content in pre-16/key stage 4 curricular, recognising that many in the FE sector also teach these qualifications (section 9)
- We summarise how many, and which types of, FE provider are delivery qualifications with ESD content
- The case studies are presented next
- We then summarise our recommendations for FE provider leaders particularly those responsible for quality, curriculum and organisational development as well as educators and other sector bodies who can promote and enable ESD uptake in the curriculum
- Data tables relating to courses where broad and partial ESD coverage was found are presented as appendices.

5. Recommendations

There is much that could be done to increase the teaching of ESD post-16. We recommend all these approaches, recognising that while rapid progress is possible in some areas, others may require action over the longer term. The recommendations are split into two: those for leaders of FE providers, particularly those responsible for quality, curriculum and organisational development as well as educators, and, those for other sector bodies who can promote and enable ESD uptake in the curriculum.

a. Recommendations for FE providers and their leaders and educators

- Set your ESD work within a whole-institution approach, as recommended by the Climate Action Roadmap for FE Colleges.
- Ascertain existing ESD expertise and competencies amongst your workforce, identifying training and development needs and ensuring staff have been adequately trained in how to embed ESD into their teaching and learning practice – this could be through a survey, workshops or focus groups.
- Map existing ESD practice across your own provision – both formally through the delivery of your curricular but also informally through co-curricular activities such as enrichment, tutorials, careers advice and guidance etc.
- Learn from successful approaches to embedding ESD in the curriculum, such as those highlighted in the case studies in section 11.
- Develop SMART action plans for enhancing ESD provision across your provision with a clear accountability matrix and a high-level champion of ESD practice.
- Include ESD within your overall organisational strategic goals.
- Identify and consult with relevant stakeholders to develop your ESD practice – building external partnerships as appropriate.
- Discuss ESD with non-teaching staff as well as educators, encouraging them to collaborate to create educational and/or research opportunities through their related work.
- Embed ESD development and practice goals within job descriptions, inductions for new starters and personal development plans for your workforce.
- Include ESD development workshops within relevant staff meetings, conferences and seminars.
- Include ESD provision within standard curriculum planning templates for schemes of work and lesson plans, encouraging your workforce to consider opportunities to bring ESD into their teaching and learning practice.
- Equip relevant staff to provide comprehensive and dynamic green skills and careers advice and guidance.
- Encourage participation in national and international ESD engagement and development events such as relevant conferences and the annual Global Goals Teach In.
- Include ESD as a discussion point with your awarding organisation relationship managers.
- Regularly reflect regularly upon your ESD practice and develop opportunities to identify the outcomes and impact of your ESD work where possible.

The ETF has established an ESD programme area and will be developing a range of tools, resources and CPD to support the sector's workforce in implementing these recommendations. This will include support for leaders particularly those responsible for curriculum and quality, informed by this research.

b. Recommendations for sector bodies who can promote and enable ESD uptake

- Awarding bodies could:
    - map ESD outcomes within their own portfolio
    - develop their ESD provision to ensure they have adequate qualifications for skills development relevant to our national sustainability goals as both specialist qualifications and also embedded across all their qualifications as a universal principle.

- Employers contributing to the development of new apprenticeships and technical qualifications could seek to ensure ESD competencies are included.

- Funders and regulators could:

- Work with relevant sector stakeholders to review all qualification specifications and ensure that they describe how ESD is addressed and to signpost the opportunities to teach ESD themes. This could include the aim of enhancing the ESD content in existing post-16 qualifications with high enrolments such as A Levels in science subjects, Economics and Politics, and GCSE Citizenship.
- Set targets for all students to experience some ESD during their post-16 studies and require all study programmes to address ESD using relevant funding systems to incentivise providers to offer qualifications which have a strong ESD focus and make access to ESD an entitlement for all post-16 learners. This could include the recognition of a range of appropriate qualifications at various levels for additional funding, including short modular ESD courses as well as for embedded approaches.
- Fund the necessary training and support to enhance the knowledge and confidence of leaders and educators across the FE workforce.
- Include ESD provision within the regulatory frameworks used by the sector.

FINDINGS

The baseline for this audit is every qualification with any post-16 learners enrolled in the academic year 2020/21. The current Individualised Learner Record (ILR) shows **3,466,069** enrolments on **10,815** different qualifications. This includes qualifications across all sector skills areas (SSA) at all levels (Entry to level 7) and of different lengths. Some learners may be enrolled on one longer qualification, others may be enrolled on several shorter qualifications. The learners enrolled on these qualifications may be any age from 16 upwards, part time or full time.

These 3.5 million enrolments are spread unevenly across the 10,815 qualifications. Less than a third of these qualifications (2,967) account for 95% of all enrolments, meaning that over two thirds of qualifications account for only 5% of enrolments, each of them having fewer than 100 enrolments nationally.

Around 5% of qualifications (584) account for 73% of all enrolments and these each have over 1,000 enrolments nationally.

Just 1.5% of qualifications (160) account for half of all enrolments nationally and all of these were included in the audit.

This audit seeks to include all other qualifications identified as having ESD content, however low their enrolments.

The ESD content of different qualifications was explored for:

- Qualifications with a title containing ESD descriptors
- Qualifications containing a unit containing ESD descriptors
- Other qualifications in areas which are ESD related, including T Levels
- Other qualifications identified from those which account for over half of all enrolments.

We found ESD content in a total of 133,983 enrolments on 52 qualifications, or 3.9% of the total:

- Qualifications with **broad ESD coverage** accounted for **18,474** enrolments on 11 qualifications or a total of 0.5% of all enrolments.
- Qualifications with **partial ESD coverage** accounted for a further **115,509** enrolments on 41 qualifications or 3.4% of all enrolments.

Sections 7.1-7.4 outline how we found this coverage, using different searches. Where there was a possibility of double counting we've been explicit about how we've calculated the totals.

a. ESD descriptors within qualification titles

The selected descriptors were: **climate, environmental, global, sustainability** and **sustainable**.

This search of qualification titles in the Individual Learner Record (ILR) was followed by some sense checking to filter out qualifications where the descriptor does not suggest ESD content (e.g: Global Dance).

The results of this keyword search were as follows:

- **Environmental: 4,327** enrolments on 38 qualifications (minus 142 on 8 qualifications to avoid double counting) including A Level Environmental Science which accounts for 2,099 enrolments.
- **Sustainability: 1,888** enrolments on 11 qualifications

- **Global: 276** enrolments on 4 qualifications
- **Climate: 136** enrolments on 2 qualifications
- **Sustainable: 111** enrolments on 9 qualifications

All these qualifications were then included in the audit – regardless of enrolment numbers.

b. ESD descriptors within qualification units

It was also possible to search the titles of units within qualifications. We used the same keywords as outlined in 7.1. Six qualifications will have some students enrolled on units with ESD descriptors in their title. These qualifications have a total of 2,950 enrolments but as the units are optional it is not possible to estimate how many enrolments they account for. The qualifications are listed in Appendix 3.

c. Other ESD related qualifications

Each sector skills area (SSA) has sub-areas, of which the following two have broad ESD content:

- **Geography**: This consists of **15,610** enrolments on 3 qualifications: 14,371 on A Level Geography, 608 on AS Level Geography and 207 on GCSE Geography.
- **Environmental Conservation**: This area has 2,722 enrolments on 34 qualifications. Of these, 1,022 enrolments on 8 qualifications have already been counted in the previous ESD descriptor search, giving an additional **1,700** enrolments on 26 qualifications.

Four further areas were analysed more closely starting with the qualifications with the most enrolments. Some of these are also identified within section 7.4 below.

- **Engineering and Manufacturing Technology** qualifications were analysed and this area accounts for **10,272** enrolments on 8 qualifications with partial ESD coverage.
- **Health, Public Services and Care** qualifications were analysed and this area accounts for **9,918** enrolments on 3 qualifications with partial ESD coverage.
- **Construction, Planning and the Built Environment** courses were analysed and this area accounts for **9,092** enrolments on 17 qualifications with partial ESD coverage, including 935 enrolments on 5 qualifications including the phrase ‘heat pump systems’.
- **Agriculture, Horticulture and Animal Care** qualifications were analysed more closely and this area accounted for **880** enrolments on 5 qualifications with broad ESD coverage and a further **1,087** enrolments on 3 qualifications with partial ESD coverage.
- **T Level** technical qualifications and occupational specialisms were analysed, and the **Technical Qualification in Design, Surveying and Planning for Construction** was identified as having partial ESD coverage and currently has **253** enrolments.
- **A and AS Levels** in **Design and Technology** (1,413 enrolments) and **Geology** (1,380 enrolments) were also identified from the full A Level analysis as having partial ESD coverage.

d. High enrolment qualifications

As previously stated, just 1.5% of qualifications (160) account for half of all post-16 enrolments nationally. Many of these are the same qualifications offered by different awarding bodies so each has only been listed once. These are summarised below and those in bold have some reference to ESD. All others had none.

- **GCSE** English and maths, Functional skills English, maths and ICT.

- **A Levels:** Art & Design, **Biology,** Business, **Chemistry, Economics,** English language, English Literature, Film Studies, **Geography,** History, Law, Maths, Media studies, Physics, **Politics,** Psychology, Sociology. (A Level and AS geography already counted in 6.3 above)
- Extended Project (a skills-based research report on a topic of choice)
- Certificate in Mathematical Studies.
- Extended Diplomas in Art and Design, Creative media production and technology, Health & Social Care, IT, Public Services.
- Diplomas in Adult Care, **Advanced Manufacturing Engineering**, Art & Design, Beauty Therapy, Creative media production and technology, Creative practice, Criminology, Dental Nursing, Early Years Workforce, Electrical Installations, Hair Professionals, Managers, **Plumbing Studies**, Site Carpentry.
- Certificates in Understanding Autism, Awareness of mental health problems, Criminology, Understanding children's and young people's mental health,
- Foundation certificate in Accounting.
- BTEC National Extended diplomas in **Applied Science**, Business, Health & Social Care,
- BTEC extended diplomas in Business, Sport,
- BTEC National Foundation Diploma in **Applied Science**, Business, Health and Social Care,
- BTEC National Extended Certificates in Applied Law, Business,
- BTEC Diploma in Teamwork and Personal development in the community.
- Technical Certificates in Childcare and Early Years, Health and Social Care
- **NVQ Extended diploma in Engineering Maintenance**, **NVQ Diploma in Plumbing & Heating**.
- Award in infection prevention (COVID-19) for Hairdressing and barbering services, beauty therapy and nail services.
- **Electrotechnical qualification**

e. Examples of ESD content

This section provides more detail on the ESD content of those qualifications where it was found: all qualifications identified as having broad ESD coverage and some of the qualifications identified as having partial ESD coverage.

e.i. Qualifications with broad ESD coverage

These are also listed in Appendix 1.

A Level Geography (14,371 enrolments)

- 3.5% of College A Level entries – compared to 5% of school sixth form A Level entries
- The DfE subject requirements specify that it must include:
    - the concepts of causality, systems, equilibrium, feedback, inequality, representation, identity, globalisation, interdependence, mitigation and adaptation
    - sustainability, risk, resilience and thresholds.
- Two of the four core themes are: the water and carbon cycles and global systems and governance - including the nature of economic, political, social and environmental interdependence in the contemporary world.
- When school sixth forms are included, the total numbers entered for A Level Geography rise to 25,557, or 4.5% of all A Level entries.[20]

A Level Environmental Science (2,099 enrolments)

- 0.4% of college A Level entries – compared to 0.02% of school sixth form A Level entries

- Subject requirements specify that it must include:
    - how human activities interconnect with natural systems
    - the scientific knowledge needed to understand these interconnections
    - the changes in human activities needed to develop sustainable industries and lifestyles

The specifications go into more detail:

- The focus in all topics should be to develop a holistic understanding of sustainability and the circular economy. Examples should be taken from throughout the areas of study to gain an understanding of the interconnected nature of environmental problems and solutions to these problems.
- Areas of study include the conservation of biodiversity, how humans influence biodiversity, with examples in a range of different contexts and methods of conserving biodiversity.
- Under the physical environment, the emphasis should be placed on understanding how anthropogenic activities are interconnected with physical processes, to formulate management strategies and plan sustainable activities.
- The sustainable management of the carbon, nitrogen and phosphorus cycles including the sustainability of current energy resource exploitation, the impact of extraction/harnessing, pollution and depletion of reserves, strategies to secure future energy supplies, evaluation of new extraction/harnessing technologies relating to: fossil fuels, nuclear power: fission and fusion, renewable energy technologies, new energy storage systems, new energy conservation technologies, vehicle design for use and end of life and building design.
- A Level Environmental Science entries are lower in schools than in colleges and including school sixth forms only increases the numbers to 770, or 0.1% of all A Level entries.[20]

Ascentis Level 1 and 2 Awards in Environmental Sustainability (690 enrolments)

- These are designed to give learners knowledge and understanding of the basic principles of sustainability and environmental impacts.
- They introduce the learner to key issues in sustainability, raising awareness of the topic and encouraging them to consider their role in helping to make sustainable choices.
- The qualifications can be used in an induction programme or integrated with a longer programme of study within a vocational area.

Pearson BTEC Nationals in Environmental Sustainability (190 enrolments)

(Final registrations in 2020 with a potential replacement under development)

- These are part of a suite of BTEC National qualifications aiming to provide a clear, structured route into a range of careers within the environmental sustainability and related sectors, whilst also providing a progression route to higher education and further training within the sector. The rationale for this suite of qualifications is that environmental sustainability and related environmentally-based sectors are growing rapidly within the UK. A need has been identified to educate and train learners for employment within environmental sustainability sector-based organisations or individuals within a wide range of other related organisations and to meet the considerable interest from employers and to support the low carbon economy and skills development in this area. This was developed as a response to concerns about the lack of specialist knowledge and understanding within the environmental sciences. Topics such as climate change, conservation, environmental monitoring and energy management are fundamental to the development of environmental awareness, and there is a need for an increase in the practical skills and techniques that support environmental understanding.

NCFE Level 2 Certificate in Understanding Climate Change and Environmental Awareness (132 enrolments)

- The qualification purpose is defined as providing learners with an introduction to the principles of climate change and environmental awareness and ensuring they understand the nature of climate change and the role they can play in helping to reduce carbon emissions. Through achieving the qualification, learners will gain the knowledge and understanding to act as drivers of positive change within the workplace and at home.
- The aims and objectives include the study of environmental awareness and carbon footprint reduction associated with a wide range of workplaces and linked to the lifestyles of individuals. For learners to become familiar with the basics of the environment and climate change, to develop an understanding of environmental protection and the action that can be taken within the workplace to mitigate the damaging impact of industry on the environment and to explore how the lifestyle of an individual can be environmentally detrimental, while offering an insight into ways to reduce their carbon footprint.

e.ii. Qualifications with partial ESD coverage

The full list of qualifications identified as having partial ESD coverage is listed in Appendix 2. Here we provide examples of some of these outlining the sustainability content they cover.

A Levels

- **A Level Biology:** The DfE A Level subject requirements specify that it must include an appreciation of the relevance of sustainability to all aspects of scientific developments and that biodiversity refers to the variety and complexity of life which may be considered at different levels. Subject specifications refer to the need to 'show understanding of the need to manage the conflict between human needs and conservation in order to maintain the sustainability of resources.' In studying recombinant DNA technology, students should be able to 'balance the humanitarian aspects of recombinant DNA technology with the opposition from environmentalists and anti-globalisation activists.' (AQA).
- **A Level Chemistry:** The DfE subject requirements include that it must ensure an appreciation of the relevance of sustainability to all aspects of scientific developments. Subject specifications refer to 'the search for sustainable chemistry' and the need to understand 'the link between absorption of infrared radiation by bonds in CO2, methane and water vapour and global warming.'(AQA).
- **A Level Physics:** Specifications have not been included as they make no reference to climate change. They do mention however 'the basic principles and uses of heat pumps' without requiring any practical knowledge.
- **A Level Geology:** The DfE subject requirements include core knowledge and understanding of the Earth's materials and resources including the extraction of geological resources and storage of waste products, including the use of planning for extraction/storage to be economic, and for environmental sustainability. Non-core knowledge and understanding includes hominin evolution in response to repeated large scale environmental and climate change, including hominin evolution up to Homo sapiens. The Critical Resources topic includes the quarrying of bulk minerals in the British Isles, including the environmental impact of geological factors, extraction planning, and the national and local economic benefits. Geohazards includes the application of engineering geology and the impact of major civil engineering activities on the natural environment.
- **A Level Politics** must require students to know and understand the role and significance of institutions of global political governance: the UN and other key bodies and institutions of global environmental governance: including the UN Framework Convention on Climate Change

(UNFCCC); global civil society and the significance of the role played by non-state actors, including non-governmental organisations (NGOs); the ways and extent to which these institutions address and resolve contemporary global issues, such as those involving conflict, poverty, human rights and the environment.

- **A Level Design and Technology** requires students to develop knowledge and understanding of the main features of manufacturing industries, including stages of production, quality assurance and quality control, modern manufacturing methods and systems when combining or processing materials, sustainability, and services to the customer including legal requirements, the environmental factors affecting disposal of waste, surplus materials, components and by-products, sustainability, and costs.
- **A Level Economics** requires students to study economic choices and markets. The emphasis must be on the market model of resource allocation. Students must be required to understand the economic behaviour of consumers, producers and governments in competitive and non-competitive markets. The impact of social, institutional, technological and environmental change and globalisation on present and future economic behaviour must be considered. In the national and global economy, the emphasis must be on the use of economic models to develop a critical understanding of macroeconomic and global issues.

ESD content appears to be absent in A Level Law, Business and all other A Level subjects.

Technical qualifications

- The **BTEC Diploma in Applied Science** mandatory unit 'Contemporary Issues in Science' includes a reference to energy sources and renewables, the use of carbon capture and refers to the environmental impacts of recent developments such as advanced medical and food technology. There is no explicit reference to climate change.
- The **BTEC Diploma in Engineering** specification refers to understanding adverse human impacts on the environment and refers to sustainable applications in a number of units. The optional unit 57 'Sustainable transport' requires learners to explore sustainable alternatives to petroleum-based fuel powered vehicles as well as ways to access goods and services that could help to reduce the distanced travelled by transport vehicles. Learners go on to investigate the barriers to adopting sustainable transport as well as possible incentives and penalties to influence the adoption of sustainable modes of transport and to exercise judgement as to the suitability of alternatives for transport needs.
- The **BTEC Diploma in Public Services** contains a unit called 'Environmental Policies and Practices' which aims to develop knowledge of the impact of pollution and environmental hazards, the legal and regulatory framework which supports sustainability and the need for sustainable development in a public service context.
- The **NVQ Diploma in Domestic, Plumbing and Heating (City & Guilds 9189)** is an apprenticeship qualification designed by key employers in the Plumbing and Domestic Heating industry as a new 'trailblazer apprenticeship'. It includes an Environmental route and provides the knowledge and skills and core behaviours on all aspects of plumbing and heating systems and is aimed at new technicians entering the Plumbing and Domestic Heating industry who wish to be trained in the skills and knowledge associated with plumbing and heating systems. These include measuring, marking, cutting, bending and jointing metallic and non-metallic pipework. Appliances and equipment can include gas, oil and solid fuel boilers as well as pumps, heat emitters, bathroom furniture or controls as part of a cold water, hot water, and central heating or above ground drainage and rainwater systems. Plumbing and Domestic Heating Technicians are at the forefront of installing new and exciting environmental technologies like heat pumps, solar thermal

systems, biomass boilers and water recycling systems and the Environmental route for this qualification supports this.

- The core content for the **T Level in Design, Surveying and Planning for Construction** refers to developing an understanding of 'sustainability and the environmental impact of construction' and the occupational specialist content refers to the importance of sustainability at every stage of planning and delivering a construction project.
- The other two T Level qualifications currently available (**Childcare** and **Digital**) do not explicitly refer to ESD in their core content. T Level Occupational specialist content for Early Years and education and childcare touches briefly on 'the benefits of supporting children to investigate and appreciate the natural environment among the 'Support and promote children's play' Performance Outcomes. The need for organisations to respond to change, including environmental is briefly touched on in the T Level core of the Digital production, design and environment T Level.
- The **Pearson Edexcel Level 5 NVQ Diploma in Construction Management (Sustainability)** is a level 5 qualification for Higher Level Apprenticeship which allow learners to demonstrate competence against National Occupational Standards (NOS), which are based on the needs of the Construction industry as defined by ConstructionSkills, the Sector Skills Council. The qualification contributes to the development of skilled labour in the sector. Learners will carry out fieldwork in a number of subjects and take part in guided site visits to some of the top projects in the country.
- **City & Guilds Diploma in Advanced Manufacturing Engineering** includes a mandatory unit 301 'Health & Safety in the Engineering workplace' which requires learners to 'understand how environmental regulations affect the activities of the engineering industry.'
- **City & Guilds 5357 Electrotechnical qualification** includes a mandatory unit 101/001 'Understand Health, Safety and Environmental Considerations' which requires learners to describe the ways in which the environment may be affected by work activities and to specify the current requirements and good working practices for processing waste on site.
- The **Ascentis Level 1 Award in Preventing Plastic Pollution** gives learners an understanding of different types of plastics and their uses, as well as how to reduce pollution. The topic of plastic pollution has been well covered in the media and this qualification aims to help learners understand the subject and its impacts.

e.iii. ESD in the pre-16 curriculum (Key Stage 4), from DfE GCSE subject requirements

The audit included a short survey of where post-16 students might have experienced ESD in their pre-16 programmes.

- **GCSE Geography** which is taken by 46% of Year 11 students should enable young people to become globally and environmentally informed and thoughtful, enquiring citizens.
- **GCSE Biology** which is taken by 30% of Year 11 students includes how biological information is used to help humans improve their own lives and strive to create a sustainable world for future generations. The subject specifications also state that students should evaluate the evidence for additional anthropogenic causes of climate change, including the correlation between change in atmospheric carbon dioxide concentration and the consumption of fossil fuels, and describe the uncertainties in the evidence base and describe the potential effects of increased levels of carbon dioxide and methane on the Earth's climate and how these effects may be mitigated, including consideration of scale, risk and environmental implications. In addition students should be able to explain some of the benefits and challenges of maintaining local and global biodiversity.
- **GCSE Citizenship** which is taken by 3% of Year 11 students has the potential to offer ESD content but currently has very little; touching on international structures and 'questions facing society in a global context…'

- **GCSE Double Science** which is taken by 71% of Year 11 students also has the potential to offer ESD content.

It is therefore important to note that when learners take an FE qualification, there is no certainty as to the ESD-related knowledge, skillset or competencies they will have as a result of previous education.

e.iii. Providers offering qualifications with broad ESD content

The provider database used included 249 college providers (175 General FE colleges, 50 Sixth Form Colleges and 24 Specialist Colleges), 1,214 independent training providers and 362 adult and community learning providers. Some providers may appear in more than one category.

Qualification	College providers	ITP providers	ACL providers	Notes
A Level Geography	154			62% of colleges
AS Level Geography	26			
GCSE Geography	9			
A Level Environmental Science	37			15% of colleges Providers are mostly sixth form or tertiary colleges with large A Level offers. Half of these enrolments come from 8 colleges.
AS Level Environmental Science	8			Over two thirds of all entries come from one college.
Extended Diploma in Environmental Sustainability	1			
Subsidiary diploma	6			
Subsidiary certificate	3			These are three of the colleges which provide the subsidiary diploma.
Subsidiary award	3	3		Half of all entries come from one college.
Certificate in Understanding Climate Change and Environmental Awareness	11	5	1	More than half of all entries come from one college.
Award in Preventing Plastic Pollution	3		1	
Source of Energy QCF units	1			
NVQ Diploma in Construction Management (Sustainability)	15	2	1	

CASE STUDIES

The provider case studies were selected because they had registered previous curriculum strategy and teaching and learning activity in the area of educational sustainable development. The project sought to ensure that a good range of curriculum and qualification types, student cohorts and settings are presented including college further education vocational, higher apprenticeships, training provider, adult and community education, ESOL, initial teacher training, foundation learning and academic studies.

The case studies range from provision where learning and ethos around sustainability are dominant or are the primary content, through to examples where teachers have embedded, and in some cases, manipulated and emphasised content to ensure that learners receive this content. Elsewhere specifications and syllabi where there are specific unit or module content as part of a broader specification have been included. Wherever possible the provider's enabling strategy and vision have also been mentioned. Consistent characteristics of the case studies are the passion and commitment to sustainability exhibited by teachers and the appetite of learners for the subject.

The providers who contributed case studies commented positively on how the leadership and management of their organisation has provided a supportive backdrop and the conditions for them to develop and implement sustainable development in the curriculum. The extent to which defined and mature strategies are driving this currently ranges from a well-defined and holistic organisational and educational ethos and approach through to an emerging strategy where the priorities are currently being defined. Where there are new technologies such as in electric and hybrid vehicles the employer and customer demand is still warming up and providers are now starting to make strategic inroads into these markets, deploying innovative partnership working to achieve this.

The Education Training Foundation welcomes from providers information and examples of sustainable development case studies from within the sector in order to further build and strengthen the knowledge and practice base and inform future research, training and development.

The key themes and strengths of practice emerging from the case studies.

- Supportive leadership for ESD within the provider, which sometimes exists within a very clear strategic construct, which enables uptake of ESD practice.
- Site visits for learners and engaging employers and civic and community organisations.
- Empowering and equipping learners to be future leaders and champions for sustainability.
- Linking sustainability to social mobility and community improvement.
- Roleplay and use of scenarios to present and experience challenges, conflicting interests and perspectives.
- Use of external speakers to provide real life experiences and expert knowledge.
- Imaginative use of sustainability enterprises and businesses.

Provider	Curriculum Area and Type	Features and characteristics of the teaching and learning
North East Surrey College of Technology	Travel and Tourism	Scenario-based learning to consider application and implementation of sustainability principles within a vocational context.
Redbridge Institute	Pre-entry, Entry, ESOL	Engaging the local council to provide practical sustainability knowledge and insights. Helping to empower learners to implement home and community changes and improvements

Varndean College	A Level Geography	Field work and using real life examples to heighten and strengthen learning and understanding.
Wiltshire College	Foundation Learning	Sustainable business enterprise connected with, and supported by, local interests and bodies including the local wildlife trust and retailers.
Michaeljohn Training School	Hairdressing and Barbering	Training provider approach to making learners aware of, and how to practise, sustainability in the salon and the commercial world, developing responsible future business owners.
Peter Symonds College	A Level Environmental Science	Field work and using real life examples to heighten and strengthen learning and understanding.
West Suffolk College	Accountancy (AAT)	Challenges and scenario-based learning to make links for learners between the profession and sustainability in a commercial business and organisational context. Making learners aware of responsibilities and influence in future job roles.
Priestley College	A Level Geography	Field work and using real life examples to heighten and strengthen learning and understanding.
Bexhill 6th Form College	Level 3 Diploma in Environmental Sustainability	Field work, employer engagement and using real life examples to heighten and strengthen learning and understanding.
Burnley College	Level 1 and 2 Award in Environmental Sustainability, Level 2 in Construction Craft, Level 3 Construction and the Built Environment	Short qualifications used as part of learner inductions to provide an underpinning understanding of sustainable principles to then be applied and developed in subsequent vocational contexts.
Bradford College	Initial Teacher Training	Prevalence of outdoor learning, site visits and applying tools including apps to provide a largely urban-based learner cohort with new and wider experiences inspired by the natural world.
Leeds College of Building	Higher Apprenticeship in Construction Management (Sustainability)	Delivering specific sustainability content, use of practical experiments (alternative energy systems) and emphasis on locally and sustainably sourced building materials.
Wolverhampton College	College Certificate Electric and Hybrid Vehicles and Environmental Sustainability Certificate	Six hours college certificate introduced in the absence of an accredited option. Electric Vehicle and Green Technologies Centre introduced and working closely with the West Midlands Combined Authority to deliver a sector-based work academy around electric and hybrid vehicle training.
Hereford College of Arts	Foundation Diploma in Art and Design	Holistic approach and commitment to sustainability that challenges established conventions and norms around art and design practice including how final shows and exhibitions are presented.

Travel and Tourism at North East Surrey College of Technology

Jennifer Fasad, lecturer

At North East Surrey College of Technology, Jennifer Fasad teaches Unit 19 Responsible Tourism on the Level 3 NCFE Extended Diploma in Travel and Tourism. Jennifer says that this unit can only be taught as part of year two of this programme, this is because she feels that it is a unit that is particularly academically challenging for learners. She uses the following occupational scenarios with the students to explore the topic.

The first scenario is knowledge-based and requires learner to synthesise their learning.

> *You have travelled to a number of destinations and have seen both positive and negative effects tourism can have on destinations. You are concerned about what you have seen and would like to raise awareness of these impacts. You have been asked to produce an article that demonstrates your knowledge of responsible tourism, impacts upon destination and stakeholders and their responsibilities. You should include sophisticated examples and appropriate comparisons between these throughout.*

The teacher uses activities which require learners, based on their research, to firstly explain what is meant by the term responsible tourism (including sustainable, eco and green tourism). Learners have to describe the impacts that tourism can have on a destination, both positive and negative, they consider economic, environmental, social and cultural impact. In addition to this, learners identify who the key stakeholders are and explain the roles that these stakeholders play in responsible tourism including private, public and voluntary sectors including tour operators, individuals, indigenous populations and tourist development organisations.

The next assignment requires learners to think more strategically. They must research three destinations: one local, one national and one international and produce a case study for each. Within each case study learners identify responsible and irresponsible tourism practices and conclude with what the long and short-term effects of these could be. The learners then have to think strategically and identify strategies to minimise the negative impacts and maximise the positive impacts, making two recommendations for each of the case studies. The learners must recommend how the strategies could be continued, developed or improved to ensure that the tourism practices are responsible. Learners expand on their previous work and choose one of the three destinations previously studied to produce an advisory leaflet for stakeholders on how they can contribute to responsible tourism.

The learners' reflections on the unit and its assignments indicate a greater insight into sustainable and responsible tourism including changed views.

> *"I learned that there are quite a lot of issues that companies have to consider, especially tourism organisations with the impacts that happen to local communities and the local environment."*
>
> *"My views were changed. I have to consider how companies have to think about putting money towards clearing up the damage that is caused. For example, carbon offsetting and recycling strategies for hotels."*
>
> *"This is the most difficult topic of the tourism course. There are lots of difficult principles to learn. It surprised me how much travel companies had to consider these principles of responsible tourism and which companies were thinking about them."*

It is interesting to note that responsible tourism is not restricted to this unit, Jennifer also ensures that,

as part of other units, such as Unit 16 Worldwide Passenger Airlines, learners consider environmental concerns such as noise, emissions, global economic change and tensions, fluctuating exchange rates and fuel prices and how these elements are entwined with the environment.

English for Speakers of Other Languages (ESOL) at Redbridge Institute

Joni Cunningham, principal, Nasreen Akhtar, project manager for English Every Day, and Sarah Crème, project manager for ESOL

Redbridge Institute is an adult education provider. Teachers design and deliver sustainable development content to pre-entry and entry 1 ESOL learners using a range of practical activities with real-life application supported by engagement with officers from the Borough Council. Typically, the learners undertake a 30-hour ESOL programme brought to life through sustainable and environmental topics with the aim of providing them with the knowledge and language they need to be empowered about sustainable development within their community and home lives.

Sustainable development runs as a core theme throughout the ESOL programme. The work and projects were initially a result of Redbridge Institute's Sustainable Development Task Group which looks at how sustainable development can be embedded within the curriculum across the whole Institute.

Staff leading on sustainable development include the Principal, Joni Cunningham (recently retired), and curriculum managers Nasreen Akhtar and Sarah Cremer. Central to their approach is to use activities which help their learners to develop language that enables them to engage effectively with local authorities and councils. Learners have used their new language skills and understanding of sustainability to be able to enrich their communities through environmental improvements such as waste management and recycling improvements in their immediate neighborhoods.

"Learners have used their new language skills and understanding of sustainability to be able to enrich their communities through environmental improvements such as waste management and recycling improvements in their immediate neighborhoods."

The teaching team use themes such as improving the local environment, energy saving and the understanding of recycling and waste services as drivers for the development of the learners' language skills. The team also relate the curriculum content wherever they can to United Nations Sustainable Development Goals, focusing mainly on Sustainable Cities and Communities and Responsible Consumption and Production.

Learners who have left Redbridge Institute have returned to tell their teachers about how they have used what they had learnedon their course. For example, to successfully request, as part of the London Borough of Redbridge Civic Pride initiative, street closures for goods sales and community events such as play streets. The team believe that this validates the focus they place on the UN Sustainable Development Goal of Sustainable Cities and Communities and its use as a key driver in helping learners to make the link between sustainability, local community and civic improvement actions.

A project they set for learners, which combines language development, practical everyday life skills and sustainable development, looks at waste management and recycling. This is brought to life by inviting guest speakers who work in waste management companies, including officers from the local borough council, to present to the learners what work is being undertaken. The guests use visual presentations to help the learners to learn about waste and energy management and how to apply this practically in their lives. Prior to the guest speaker visits, teachers work with the learners to help them prepare questions. After the visit a reflective exercise is used to consolidate the learning and assess how the learners can apply what they have learnt at home, at work and in their communities.

The sustainable development theme is further strengthened by modules which focus on saving energy and food waste linked to budgeting and shopping. Many of the learners live in high occupancy households so this new knowledge has real value and has a direct application for them within the home and community.

Higher level ESOL learners have helped to create a community gardening plot within the grounds of the Institute. The plot includes a greenhouse made from recycled plastic bottles. Teachers use this resource as stimuli for creative writing, this has resulted in learners producing for example poetry on environmental themes. The plot has also acted as an outside classroom in better weather.

Entry level 3 learner evaluations and reflections illustrate how much the learners value the sustainable development content of their course. The combination of the development of language, self-confidence and knowledge leads to positive application and impact within the learners' workplaces, communities and households.

Here are some examples of what the learners said about their course which illustrate the impact of the learning:

> *'In Clayhall there is no recycling bin. I will call Redbridge Council to tell them to please give us this facility'*
>
> *'I want to advise my boss that he has to recycle the rubbish.'*
>
> *'We liked the play street idea. We learnt so much about street clear and where to put our waste things.'*
>
> *'I like this presentation very much. I would like to invite play streets in my area please. In that events we can know each other and we built a lovely neighborhood.'*
>
> *'I like the way she explained about how we can make compost.'*
>
> *'I always put my recycle bin in the right place.'*
>
> *'We learn some good things like how to save water from the rain. Turn off our electricity from the socket.'*
>
> *'We also learnt where we contact for big rubbish bins.'*
>
> *'We learnt where we keep old furniture and that the council will take this 3 times a year.'*
>
> *'I know more information about recycling and how to clean the area.'*

A Level Geography at Varndean College

Mark Halliwell, programme leader for geography and environment

Mark Halliwell teaches GCE A Level Geography and the BTEC Level 3 Diploma in Environmental Sustainability. The College until recently also delivered GCE A Level Environmental Science. The A Level in Geography specification contains two areas of study with a strong focus on sustainability, covering both physical and human geography. Area of study 3 is physical systems and sustainability and area of study 4 is human systems and geopolitics. Mark ensures that a strong focus is placed on health and welfare and on sustainable communities linked to the United Nations Sustainable Cities and Communities Goal.

Learners study the role of water and how this is essential to supporting life. Learners look at the impact of human and physical activities and processes on water management and security. They are made aware of the consequences of water insecurity. Another topic covered is the carbon cycle and energy security which includes much of the traditional bio-geography and meteorology. Ecological and other earth systems are understood through the paradigm of carbon cycling. The teaching in other more traditional topics like coastal geography gets learners to consider the impact of rising sea levels and to adopt a holistic view of this subject through an understanding of integrated coastal zone management (ICZM).

Mark is clear that the qualification has sustainability at its core. Learners are made aware of geopolitics on the environment and the impacts of contested global politics on the environment.

Mark firmly believes that fieldwork is central to bringing the subject to life, in addition to the mandated field visits the learners, prior to the COVID pandemic, benefited greatly from well-designed overseas residential visits where the activities centred around urban sustainability projects. For example, learners visited Toronto, Canada, where they were briefed about a real-life urban planning project by staff from the University of Toronto and they also visited the location. The project is based on a real-life debate that was held about the redevelopment of a parkland area and the tensions between this area becoming a zoo and tourist location set against its potential as a community parkland and nature resource for the community. Learners adopted a roleplay where they reimagined the debate which was supported by the Toronto City Planning Department. Learners also had residential trips to the New York in the United States of America, where they visited community projects such as sustainable housing and community gardens in Harlem which provided them with a unique insight into sustainable and social development in practice in a very urban setting.

“Mark firmly believes that fieldwork is central to bringing the subject to life.”

The course has had a positive impact on learners. Here are two examples of the learners’ views:

> *“I really enjoyed doing the geography coursework because I was able to actually work out how important a woodland is for storing carbon. The teacher showed the technique and then I adapted it”.*

> *“We have loved the geography especially because I want to work on conservation or sustainability. We have studied so many topics that help me to understand the issues. I felt very well prepared when I did my UCAS application personal statement and I had too much to write about.”*

Foundation Learning at Wiltshire College

Bea Lilley, lecturer in foundation studies

At Wiltshire College Bea Lilley has created a learner business which is run by her foundation studies learners and is built around the production of apple juice linked to the reduction of food waste. The learners collect fallen apples which would otherwise have gone to waste from a local orchard as part of a collaborative project with Wiltshire Wildlife Trust. Branded as the 'Apple Project' the learners learn how to press apple juice and how to preserve it through pasteurization. The project is in its 4th year and involves up to 30 learners per year.

The learners have one day a week throughout the year to undertake work-related activities. The 'Apple Project' and apple juice production takes place between September and December of each year with sales activity happening running consistently across the year.

In addition to the apples which the learners source directly from the orchard, good use is made by the teachers and learners of social media which has led to lots of contributions of apples from the local community for the project. To help ensure the long-term sustainability of the project Bea and her team now have a full production setup in a mobile classroom which includes an apple press and pasteuriser.

"The range and depth of the activities develop the learners' range workplace and work-readiness skills and their self-confidence."

Bea states that as a result of the project learners gain an awareness and understanding of the impact of food waste and how to prevent it. Importantly they also acquire an understanding of the seasonality of food availability and production. The project has expanded in terms of the scope of its produce which now includes other foodstuffs such as chutneys and jellies. Much of the produce is sold directly but also through supportive local retail outlets. Learners also create gift collections of the produce in presentation sets which are for sale.

The range and depth of the activities develop the learners' range workplace and work-readiness skills and their self-confidence. They also learn about health and safety, handling money and communication skills often participating in local markets to sell their produce. The teachers and learners are particularly pleased that the produce is now sold through the local low waste shop in Trowbridge town centre.

The project was successful in gaining a Green Gowns Award in 2019. The 'Apple Project' has received funding through 'Student Eats' which is an organisation which works with learners and staff at colleges and universities to create a more equitable food system by placing healthy and sustainable food at the heart of campuses across the UK.

The positive impact of the project on the learners is evident in their feedback:

'In the apple project I have enjoyed being with my friends and doing the jet washing to clear the cutter thing. I have learnt how apple juice is been made.'

'I have enjoyed going out to Wiltshire Wildlife Trust on Wednesday to pick the Apples.'

'I have enjoyed pressing and using the electric machine in the factory and selling the Apple Juice.'

‘I have gained cutting skills using a knife and using the bridge method and picking the apples is work experience on a Wednesday. And dealing with money in college and out of college at the Assembly Hall.’

‘I leant with the apple project to be more confident with cutting the apple I did it over and over until I get confident.’

‘I enjoyed cutting the apples and scratting the apples – especially putting them into the machine. I have learnt from selling the apple juice to be kind to the customers.’

‘The Apple Project is amazing as it allows the students to work in a team, cooperatively, and showcases their brilliant skills. The project allows recycling of a resource - apples- which adds to the sustainability of the venture.’

Hairdressing and Barbering at Michaeljohn Training School, Manchester.

Lesley McCormack, managing director; Gabriella McCormack, education director; Craig Anthony, executive education manager and Kingston Bell, general training manager

Michaeljohn Training School (MTJS) is collaborating with an awarding organisation to focus on the creation of sustainable development modules and qualifications for apprentices, educators, and employers. MJTS has achieved the Gold Award, Environmental Business Pledge.

MJTS recognises the increasing need to promote positive change and environmental awareness. The company uses enrichment to provide opportunities for apprentices to broaden understanding whilst also developing maths, English, critical thinking, and entrepreneurial skills and how to work independently or as part of a team. Part of this is to encourage volunteering and charity fundraising, reinforcing the 17 United Nations Sustainable Development Goals with apprentices. The company and its staff, recognise the importance of training its apprentices to become responsible and ethical business owners of the future.

Apprentices develop an understanding of the need for salons across the UK to improve sustainable development and practices. MJTS promotes a lifelong approach to sustainable development and ambitions that make a difference.

“The company and its staff, recognise the importance of training its apprentices to become responsible and ethical business owners of the future.”

The MJTS Environmental pledge and goals are embedded into the core values curriculum of learning. The company recognises it is on a journey to sustainability and has looked in detail at sustainability in the hair, beauty and wellness industry and at how this can be demonstrated through its work with apprentices.

A strong focus is placed on recyclable properties of equipment and resources, including an awareness of how the COVID-19 pandemic has escalated the amount of waste associated with the industry, particularly the significant use of essential PPE. In response to this, initiatives such as recycling bins for facemasks have been introduced.

In addition to the core industry subjects MJTS also delivers sustainability through the teaching of English and maths to its apprentices, again the focus of this is on apprentices being the salon owners of the future, pointing out to them through interactive lessons the long-term commercial benefits of sustainable practices. This starts with the importance of turning off lights in the salon to more complex ideas and practices which are used to contextualise the maths content. The teacher relates the learning to calculations relating to profit margins and financial forecasting and the benefits of embedding sustainable practices and habits. The teacher uses play money to help illustrate to the apprentices the impact of sustainable business practices, using the play money to illustrate profit or, conversely, waste by literally throwing this ‘money’ away.

Further areas of focus the apprentices engage in include fast fashion, encouraging apprentices to make good choices in their purchasing habits, how this impacts the environment and the presence of modern slavery in some areas of the industry. Apprentices look at how high street brands are increasingly promoting recycled clothing. Apprentices consider exchange and revamping approaches to retail. Apprentices are also encouraged to donate unwanted items to charity.

Apprentices at MJTS also look at the procurement and promotion of sustainable products, tools, and equipment, how to reduce and monitor energy costs. MTJS links with the Eco Champions scheme in Greater Manchester.

MJTS also incorporates sustainability into the health and wellbeing curriculum, looking at, for example, developing a healthy balanced lifestyle, nutrition including Vegan Day and exercise and fundraising.

It's important to the company that apprentices are confident and knowledgeable enough to raise and implement sustainable ideas and practices in salons and so that they can make positive contributions to fundraising, for example, supporting the homeless in Greater Manchester. The apprentices comment on how they have introduced recycling and monitoring of product waste, refilling shampoo and conditioners with refill packs in order to cut the use of plastic bottles and the use of online booking systems to cut down on the use of paper.

"It's important to the company that apprentices are confident and knowledgeable enough to raise and implement sustainable ideas and practices in salons"

The impact on the apprentices of the organisation's holistic approach to sustainable development is significant. These are some of the things they said about the teaching.:

'Stop polluting the oceans, the government could stop large companies from using as much plastic or make them pay towards a solution (tax). They could also implement stricter or more frequent recycling.'

'Sustainability makes a difference to me because it makes me be more aware of the choices I make.'

'Planting more flowers and trees, so that they can pollinate more, allowing more bees to survive'.

'As a person, it makes me feel good for helping out in my local community and the environment'.

'Recycling more will help reduce polluting in the oceans.'

'When I am contributing to the environment, it makes me feel like I am making a change to my local community. Recycling bins should be more widely available.'

'I want to contribute by donating the things I no longer need/wear/use.'

'When contributing to sustainability it makes me feel like I am helping the animals in the sea by recycling plastic. I think the government should put barriers around the oceans.'

'I don't throw clothes away, reuse them for something else, or donate them so someone can use them.'

'I now shop at charity shops to reduce the need for fast fashion.'

''It was so shocking when we actually threw the money in the bin! I can't believe what a big impact small changes can have."

''I still turn taps off between shampoos all these years later and it's because of that lesson.''

''So saving the environment actually saves you money in the long run - it's win win.''

A Level Environmental Science at Peter Symonds College

Oliver Cockroft, head of subject, environmental science and Jane Banks, teacher of environmental studies

Peter Symonds College has over 200 learners who study the A Level in Environmental Science. The Head of Subject, Oliver Cockroft and Jane Banks, teacher, ensure that through their teaching of the subject learners gain a holistic understanding of both the science of sustainability and the broader philosophical ideas and concepts that relate to it. Learners learn about, for example, global climate change, the hydrological cycle, the population cycle, biocapacity and ecological footprints, the circular economy, renewable energy.

Teachers introduce learners to current research and resources such as the World Wildlife Fund's Living Planet Report. This report includes, for example, scientific research on wildlife loss and the importance of ambitious conservation efforts. Teachers ensure that learners understand the interconnectedness of environmental issues and challenges and the solutions needed. Learners are made aware of cradle-to-cradle design whereby natural and biological metabolism are used as a model for the industrial and technical metabolism.

Oliver and Jane use field visits to local and national destinations to help learners to relate their course content to real-life problems and to also then be able to connect this to global considerations. Learners visit a Waitrose farm, water treatment and sewage plants, the Centre for Alternative Technologies and Hinkley Point C Nuclear Power Station. There is a lot of coursework that is supported through a working relationship with the Hampshire and Isle of Wight Wildlife Trust which allows learners to access wetlands reserves. Previously, overseas visits have been provided for learners, however, the teaching team are reviewing the implications of long-haul flight airmiles and the ecological justification for these trips. Historically trips have taken learners to locations such as Kenya and Belize. The review and assessment of the future decisions in relation to this very much involves the learners.

"Oliver and Jane use field visits to local and national destinations to help learners to relate their course content to real-life problems and to also then be able to connect this to global considerations."

Oliver and Jane have observed that although the learners have an active interest in sustainability before they start the course, they can underestimate the true scientific and social scale, scope and global implications that their studies reveal. The teachers wherever possible use local and reachable resources and locations, such as the field trips, to make meaningful local to global connections.

Scenarios are used to push learners into theoretical situations and scenarios where they consider conflicting requirements and tension to generate positive solutions. One such example is the learners are responsible for the production of a new pesticide and they have to investigate and consider the affects and impact of this on ecosystems and health. A key synoptical end of year task requires learners to design a sustainable music festival which must include consideration of food, lighting and energy, sanitation and so on and how to ensure that the event is sustainable in all aspects. The learners also get to choose the line-up of acts for their festival.

"Although the learners have an active interest in sustainability before they start the course they can underestimate the true scientific and social scale, scope and global implications that their studies reveal."

Around half of the completing learners progress into related higher education courses including oceanography, environmental engineering, bio-conservation and wildlife conversation. The feedback from alumni and the receiving higher education institutions is that the A Level in Environmental Science is an important qualification for the breadth and depth of knowledge about sustainability it provides and that it is being increasingly valued by higher level engineering providers.

Oliver and Jane observe that sustainability and environmentally related qualifications can still suffer from scepticism and a lack of understanding by parents and careers advisors and that there is still much work to do on improving the public 'image' and profile of these subjects.

"The A Level in Environmental Science is an important qualification for the breadth and depth of knowledge about sustainability it provides."

Accountancy (AAT) at West Suffolk College

Richard Carter, lecturer in accounting, finance and sustainability

At West Suffolk College Richard Carter teaches sustainable development as part of the Association of Accounting Technicians curriculum. Although there are specific modules and content which provide more distinct sustainable development content such as the level 3 ethics module and the level 4 systems and control module (both part of the synoptic assessments) Richard uses the topic as a fulcrum for a range of activities and tasks which force students to consider sustainable development and ethics more broadly and the complexities of the subject.

He emphasises the commercial imperatives and interdependencies rather than just focusing on narrow areas of theory. After all, the students are studying for a professional, hands-on qualification, and more and more businesses these days are built on a purpose beyond the traditional capitalist view of maximising profit.

Richard is aware that sustainability as a topic or theme is often found in science subjects and he is committed to bringing an awareness and understanding of sustainability into accounting. He uses his experience managing financial operations for a large public limited company to reinforce the criticality of sustainability within the commercial sector and the finance departments within businesses and other organisations.

"More and more businesses these days are built on a purpose beyond the traditional capitalist view of maximising profit."

As a teacher Richard recognises and works with his learners to consider the complexities, contradictions and tensions which can exist around sustainable development framed within the context of accountancy. He uses challenging and thought-provoking scenarios to probe perceptions and preconceptions about how sustainability and ethics work within business and financial settings. He argues that there is a very strong business case for understanding the topic, and that it is primarily about long term business resilience and cost efficiencies with marketing benefits a tertiary driver only.

For example, using sustainability as an advertising point might include:

- transparency to build trust and loyalty;
- many consumers really care about environmental issues;
- encouragement of other businesses to take similar actions;
- standing apart from competitors;
- distinctiveness (advertising).

Conversely the reasons to keep sustainability as a more discreet activity are often more extensive and might include:

- most consumers are still focused on price, quality and status;
- suspicion that is detracts and distracts from other attributes i.e. sustainability attributes and credentials are in some way hiding flaws, deficits;
- highlights what is not being done;
- consumers don't want to be lectured on morality;
- can come across as an insincere marketing ploy;
- reputational risk if a mistake is made around sustainability credentials (misrepresentation).

"He argues that there is a very strong business case for understanding the topic, and that it is primarily about long term business resilience and cost efficiencies with marketing benefits a tertiary driver only."

Learners are presented with a quick challenge to demonstrate the relevance of sustainability within the subject. For example, learners might be asked to select the most sustainable option from a cotton, paper or plastic bag. Learners tend to select the former, but of course cotton has an enormous water footprint. The learners might then reconsider and select the paper bag, which has a high carbon footprint and can only be used once or twice before being recycled. Lastly, they wonder about the plastic bag, which doesn't safely biodegrade and poses a huge threat to wildlife. This is very much used as a starter to encourage deeper thought around the subject.

Richard uses related corporate scandal case studies to help put across the reputational, financial and legal risks to businesses. He uses these case studies as they allow students to zoom in on real life detail, data, media coverage and consequences. For example, overseas garment factory collapses, the horsemeat or diesel emissions scandals or directors receiving prison sentences for failing to dispose of waste correctly.

Learners in Richard's lessons are taught how to think more broadly and systemically about sustainability, for example, across value chains and what could impact a business if environmental factors reduce or prevent the supply of resources, product or raw materials or indeed the export of goods and services. He is clear that students are not expected to be environmental managers but have a responsibility as financial accountants to be fully aware of the complexities and risks around ethical, environmental and sustainability considerations. After all, this is certainly the next frontier of corporate reporting: accountants are extremely focused on an organisation's risk profile and mandatory reporting frameworks are already in place.

"He is clear that students are not expected to be environmental managers but have a responsibility as financial accountants to be fully aware of the complexities and risks around ethical, environmental and sustainability considerations."

Learners are asked to consider where and when an application of knowledge and awareness of sustainability issues would be relevant in an accountancy context, for example, when they are in meetings with a production manager in a manufacturing context. Accountants are clearly recognising the importance of these issues within their businesses. Richard also teaches several Institute of Environmental Management and Assessment (IEMA) courses and notes that a disproportionate number of attendees come from a financial background.

Richard says:

> *'There is no doubt that sustainability is no longer a "feel-good bolt-on" for businesses. It is front and centre of their future whichever way you look at it: revenue growth, cost saving or investment decisions.'*

A Level Geology and Diploma in Environmental Sustainability at Priestley College

Maurizio Bartozzi, teacher of environmental science

Maurizio Bartozzi teacher GCE A Level Geology and the BTEC Level 3 Diploma in Environmental Sustainability which provides an alternative route to higher education for those learners interested in environmental and sustainability issues. As part of the qualification learners investigate and explore the impact environmental change and climate instability have had on the fossil record and how this may have affected human evolution and adaptability to change.

Learners assess waste disposal or brownfield remediation and assess the suitability of land remediation in a specified area. They have to consider the process of land resource restoration due to contamination in soil and water. Learners study geological maps to analyse the methods of extraction of geological raw materials, identifying environmental issues and how these may be addressed. In addition to this, they analyse through the use of landfill engineering data the disposal of domestic waste and sites where sites for toxic chemical and radioactive waste.

Learners are required to evaluate the environmental hypotheses that have been proposed for faunal diversification (Precambrian-Cambrian boundary) and fossil evidence for hominin evolution (up to Homo sapiens) comparing this to environmental changes. Prior to the COVID-19 pandemic the content was brought to life through field study trips to the Isle of Arran and Sicily.

As part of the Subsidiary Diploma in Environmental Sustainability Maurizio uses scenarios and simulations with his learners to help deepen their understanding of the subject. For example, learners are required to adopt the role of activists and they are asked to gather the data they need to produce a locally relevant sustainability action plan. Learners visit a cement extraction factory and learn about the environmental implications and impacts of this extraction. The cement company engages fully with the educational visit and the experience provides the learners with a rounded understanding of not only the geological elements and environmental impacts but also the mitigations and controls which are in place to minimize the negative effects of the process.

Work-placements have been established for learners with the Environment Agency, on occasions the learners' placements have enabled them to be present at critical environmental incidents, such as being able to directly observe severe flood damage in Rochdale.

Level 3 Diploma in Environmental Sustainability at Bexhill 6th Form College

Stephanie O'Grady, subject leader geography, geology and environmental sustainability

At Bexhill 6th Form College Stephanie O'Grady teaches the level 3 BTEC in Environmental Sustainability. The College introduced the qualification 3 years ago to meet the needs and interests of learners after the removal of the A Level in World Development. In addition, the qualification has also provided a practical alternative for some learners to study A levels in Geology and Geography. The College sees the BTEC in Environmental Sustainability pathway as a valuable, careers orientated qualification as it provides a strong progression platform for higher education options.

"The College sees the BTEC in Environmental Sustainability pathway as a valuable, careers orientated qualification as it provides a strong progression platform for higher education options."

Stephanie ensures that the learning is brought to life through active links with employers. For example, learners visit a local brickmaking company, Ibstock Ashdown, and this enables them to see and understand the environmental management and impact of this site. The company also promotes the importance of apprenticeships to the learners as part of this engagement. The learning activities linked to this visit require learners to be analytical and adopt an enquiring and investigative role. Learners are put into a scenario as part of this learning activity:

> *You are working for the Environment Agency. As part of your role, you are tasked to investigate the environmental impacts and management of resource exploitation. You will plan a visit to Ibstock Bricks including a risk assessment, visit the site to collect environmental impact data and produce a report of your findings. You will also talk to representatives from Ibstock Bricks and can prepare some questions for them.*

Learners visit the EDF Dungeness B power station where they receive a full tour to understand and reflect on the benefits and problems associated with including the decommissioning process. Again, the company positively promotes apprenticeships.

The qualification includes units on understanding the principles of sustainable development, sustainable communities, science for environmental technicians, energy management, wildlife populations, ecology and conservation and a science for environmental technician unit. The teachers make strong links between geography content such as contemporary urban environments and sustainable cities.

Again, the teachers use scenarios to help bring the learning to life, for example:

> *You are a researcher working for the BBCs TV show "Countryfile." They want to produce an episode focusing on sustainability in land- based industries.*

This activity introduces learners to the impact of humans on the environment and includes a brief history of how humans have used the land (farming, forestry, and fishing) in the past and how the growth of these industries is also entwined and linked with population growth.

Stephanie is clear that the qualification has been a springboard for learners who wish to progress on to higher education to study environmental studies related courses. This is supported through a quote from a current student.

> *"The course is extremely interesting and engaging due to the wide range of a topics you learn about, enabling you to discover which areas of sustainability you find the most*

intriguing. My favourite part of the course would have to be the unit on Science for Environmental Technicians, which focused on the atmosphere, oil processing, the rock cycle, water supply and nitrogen cycling."

Level 1 and 2 Award in Environmental Sustainability; Level 2 Diploma in Construction Craft; Level 3 Extended Diploma in Construction and the Built Environment at Burnley College

Gareth Jones, curriculum manager construction, Solomon Whittaker, curriculum manager construction and Sarah Condren, staff development manager

At Burnley College construction learners, as part of their induction, undertake the Ascentis Level 1 and 2 Award in Environmental Sustainability. The managers for the curriculum, Gareth Jones and Solomon Whittaker, see the use of this qualification as a means of setting the tone and establishing the awareness of sustainable development within the construction industry early on in the learners' programme. The learners then progress onto the City and Guilds Level 2 programme with an existing and underpinning understanding of sustainable principles within the construction industry.

Teachers take the learners on field trips to help bring sustainability to life so that learners start to recognise the tensions and challenges of sustainable practices within the construction industry. The teachers believe it is important to show learners how construction is changing with an increasing commitment to sustainable practices evident. Learners visit Howdens Joinery in Hull, where they have a tour of the facility and learn about waste output, ethical sourcing of materials and the move towards alternatives to fossil fuels for transport and logistics.

Throughout the construction courses delivered at the College teachers reinforce the links and relationship between timber technologies and locally and sustainably sourced timber. Learners also visit Hanson Cement, where again they receive a tour and are shown how the company is committed to protecting the wildlife in the lake which was formed as a result of quarrying. The visit content includes how new fuel sources, many of which are recycled waste, are being used for the kilns, explaining to the learners how these have replaced coal which was the primary fuel source.

The College also delivers the BTEC Level 3 Extended Diploma in Construction and the Built Environment which has sustainable construction units within it. Increasingly the teaching team are relating the content to local contexts through the assignment briefs set for learners. Currently learners are able to access a new build development on the College's site and are learning about planning restrictions and considerations such as tree protection as part of the build project.

"Increasingly the teaching team are relating the content to local contexts through the assignment briefs set for learners."

Teachers use scenario-based learning, for example, to better understand construction technologies learners take on the planning and site management role for a new carpark where they learn about urban drainage, its impact and to mitigate this.

The College, as part of its new estate, embodies and reinforces the sustainability message through the green technologies embedded within the physical estate such as the solar panels and air source heat pumps that will power and heat the buildings. Sarah Condren, Staff Development Manager, speaks positively about how the sustainability agenda is now being rolled out to all curriculum areas through targets and responsibilities. This promotes finding new subject contextual ways of developing learners' knowledge and understanding through specific assignments, activities and tasks within schemes of work and lessons.

This is further supported through cross-college enrichment activity led by the student services team

where plans for the new academic year include running a learner COP26 focused activity around the UN Sustainable Goals and the implementation of the Carbon Literacy Project course for FE and HE learners.

The College has an active Sustainability Group made up of a variety of staff from across the organisation, this year their main goal has been to raise awareness of the sustainability agenda across the organisation as well as implementing sustainable practices through whole college staff development days and campaigns throughout the year. Developments for the next academic year include combining the sustainability leaner voice into the Sustainability Group which will have four sub-groups focusing on culture, curriculum, campus and community action; this structure will ensure that the learners are able to harness the passion that they have for environmental and sustainable issues and work collaboratively with staff to make an impact.

"Developments for the next academic year include combining the sustainability leaner voice into the Sustainability Group which will have four sub-groups focusing on culture, curriculum, campus and community action."

To further reinforce the College's strategy around sustainable development Sarah outlines an approach whereby the College's own employed apprentices design and implement sustainable development projects, working in cross-discipline group, for example, in IT, business administration and facilities support areas. The projects focus on research, implementation and impact and have included projects on paper reduction, cycle to work, car share schemes and Earth Day events for learners and staff focused on reducing carbon emissions through behaviour changes in relation to electricity and introduction of a 'Burnley College Buy and Sell' - furniture recycling scheme.

By combining apprentices from IT, business administration and carpentry and joinery standards the project groups are able to fully implement and measure the impact of their projects to ensure sustainable practices into the workplace.

Going forward the College is planning a new campus development with a strong sustainability and ecological focus that will include a lake, woodland walks and a variety of other features to enhance the biodiversity of the area. The plans are that this site will include a construction, engineering and digital hub as part of future T Level delivery that will include new green technologies such as heat pumps, wind turbines, solar panels, and the latest in energy saving engineering and manufacturing technology.

Initial Teacher Education (ITE) at Bradford College

Kirstin Sawyer, head of school education and professional studies and Kim Lawler, lecturer

At Bradford College Kirstin Sawyer and Kim Lawler have a passion for embedding education for sustainable development within their teacher education programmes.

- The BA (Hons) Supporting and Managing Learning in Education includes a top-up module Greening the Curriculum: Development and Sustainability. This module helps learners develop a critical understanding of issues in sustainable development, bringing together theory and practice to from a deeper understanding of the benefits and barriers to sustainable lifestyle choices. The module content covers problems and solutions, local and national implementation, principles of sustainable development, expert bodies and sources of information, teaching and pedagogy and schools and colleges sustainable development policies and practice.
- In addition to this as part of the BA (Hons) Teaching and Learning in the Primary Phase with Qualified Teacher Status (QTS) the team deliver a Humanities module called Global Dimensions, this being modified to increase the focus placed on ESD.
- The BA (Hons) in Education Studies has a module in Environmental Education as part of preparing learners for primary teacher training, on occasions this module is used with mature Post Compulsory Education Training learners. The team understand that training for an uncertain future has its own pedagogy and this requires a dynamic approach to content design and real outdoor experiences to reinforce the learning.

“Activities with the learners in the natural environment helps them to develop their confidence and skills.”

The team use outdoor learning at every opportunity to reinforce and enrich the education for sustainable development content. They are very mindful that most of their learners’ day-to-day lives are experientially urban. As part of the focus on ‘outdoorsness’ the team engaged an external environmental specialist who through activities with the learners in the natural environment helps them to develop their confidence and skills, including the identification of natural flora and fauna such as tree identification and the use of transects and data-logs. Use is made of apps such as identification apps to provide simple tools to help make the learning interactive and experiential. This holistic approach gives the learners a repertoire of skills, knowledge and techniques which can be applied to a range of educational stages and settings.

The team set out to ensure that their learners feel safe and secure around education for sustainable development pedagogy.

“This holistic approach gives the learners a repertoire of skills, knowledge and techniques which can be applied to a range of educational stages and settings.”

Level 5 Higher Apprenticeship in Construction Management (Sustainability) at Leeds College of Building

Chris Tunningley, assistant faculty director

Leeds College of Building delivers a high volume of construction apprenticeships working closely with the industry. The Assistant Faculty Director Chris Tunningley is part of a team who deliver higher apprenticeships and apprenticeships standards. The apprentices typically attend on a day-release model but there is also block delivery where this meets the requirements of employers.

There are two main sustainable development units that the College focuses on as part of their delivery of the Higher Apprenticeship in Construction Management, these are principles of alternative energy and alternative energy systems, design and implementation.

Principles of alternative energy introduces the apprentices to how buildings consume significant proportions of global energy, water and resources, the issue of the industry's consumption is central to this. Apprentices are made aware of current legislation and the financial incentives which are increasingly driving the industry towards more sustainable practices. Apprentices understand the framework of targets and how these relate to working deadlines in real work-related scenarios. In terms of industry technologies apprentices are introduced to alternative and more efficient energy sources, water management and heating systems, for example heat pumps and biofuels. They apply their knowledge through practical activities and site visits. Apprentices also learn about solar, wind and hydro energies.

The learning and training are reinforced through the alternative energy systems design and installation unit where the apprentices gain a broader understanding of energy demands, particularly in relation to running plant, electrical devices, the heating and cooling of buildings and the pressures that these factors place on the natural environment. One activity and challenge set requires the apprentices to build blades for a small miniature turbine, the turbines are then tested to see which gives out the highest voltage. The expectation from this unit is that apprentices will be able to directly assist and advise on the design, implementation, and installation of more sustainable energy systems.

Chris ensures that wherever possible the teaching is supplemented by practitioners who are working in the industry. Chris is very aware that sustainability is increasingly the driver and focus of the industry and they consistently try to surround content and activities with an emphasis on locally and sustainably sourced materials so that this becomes habit and routine when apprentices are planning or working on a job.

"Chris ensures that wherever possible the teaching is supplemented by practitioners who are working in the industry."

The College also delivers the Pearson BTEC Level 3 Construction and the Built Environment to full-time learners. Within this qualification learners are made aware that Building Services systems are significant consumers of energy. They learn about urban drainage systems and the importance of, where the project allows, filtering and filtration systems.

Throughout the construction programmes offered by the College, apprentices and learners are made aware of the Building, Research, Establishment, Environmental Assessment Method (BREEAM) and the centrality of this to the industry.

College certificate, electric and hybrid vehicle courses at Wolverhampton College

Michael Dixon, head of faculty and Sally Slater, curriculum manager

Wolverhampton College has created an Environmental Sustainability Certificate which is delivered to learners as additionality across its subject faculties. The Curriculum Manager for A levels and Science Sally Slater says that the College developed and implemented this certificate due to finding it hard to find an accredited or a funded option. It is a six-hour certificate which is flexibly applied across subjects based on where and when the curriculum specialists feel it can best benefit and enhance content as part of the main subject aim.

The content of the certificate looks at, for example, energy sources, renewables and importantly the strengths, positives, negatives and weaknesses of each. The intention is to give the learners an underpinning practical insight into sustainable development and to start considering how they might apply this learning as part of their studies and lives outside of college. Examples of this might be the learners working out their own energy usage during their daily lives including phone charging and the energy used for non-essential activities such as background noise. Learners then consider the costs associated with their activities and what wasteful products, emissions are created in the use of this energy.

The College is planning to offer sustainable development courses for employers using flexible funding. This offer goes from level 1 up to level 3 and focuses on business related knowledge and skills from a sustainable development perspective. At level 3 the course is pitched at supervisory roles within business and how to empower people to be able to plan, manage and advise around sustainable development as part of their role within their business.

The College has also launched an Electrical Vehicle and Green Technologies Training Centre. This is enabling the College to deliver a ‘UK-first’ scheme. Technicians, and the College’s own automotive mechanical learners (once they have learned the basic and underpinning principles), will be able to develop skills and knowledge training about electrical and hybrid vehicles. The facilities are also helping the College to engage members of the community to help them develop new skills for work in the industry.

The West Midlands Combined Authority is supporting the College’s sector-based work academy programmes for electric and hybrid automotive providing training courses from beginner to advanced level. This initiative is targeting those who are completely new to the industry. The courses are the Level 1 Award in Electrical / Hybrid Vehicle Awareness, Level 2 Award in Electrical / Hybrid Vehicle Hazard Management, Level 3 Award in Electrical / Hybrid Vehicle System Repair and Replacement and a Level 4 Award in Diagnosis, Testing and Repair of Electric / Hybrid Vehicles and Components.

“The facilities are also helping the College to engage members of the community to help them develop new skills for work in the industry.”

Head of Faculty, Michael Dixon, emphasises that only 3% of all vehicle technicians in the UK are trained on electric and hybrid vehicles and that the need for these courses will rapidly increase in the future.

Foundation Diploma in Art and Design at Hereford College of Arts

Claire Burgoyne, course coordinator for UAL foundation diploma

At Hereford College of Arts tutors and lecturers take a holistic approach to promoting sustainable development to their learners and are committed to embedding it within creative arts studio practice so that it becomes a routine consideration. The College has an active Sustainability Committee which promotes and challenges practice and generates suggestions and ideas to move the agenda forward.

All further education programmes at the College comply with a Green Studio Code of Conduct. The code has a range of elements to it. For example, despite the propensity and instincts for learners to use paper, tutors and lecturers consistently challenge learners to consider an electronic format or representation as an alternative for their work. There is a consistent but lightness of touch to this supported by having a 'What would Greta do?' notice on all photocopiers.

A big decision made by tutors and lecturers has been to abandon the annual whitewashing of display boards for the final and end of year shows and exhibitions. This has avoided the need to use copious amounts of white emulsion paint and the resultant washing into the water supply of paint through brush cleaning and so on. Instead of paint tutors and lecturers worked with learners to use recycled backdrops and hanging systems consisting of brown paper, retired climbing rope, magazines and unused and unwanted packaging cardboard, which will be recycled, acquired from a removal company.

The learners, instead of using printed paper for the pen pictures alongside their final displayed work, have used QR codes which visitors can scan with their mobile devices to access this information.

The final end of year shows are a significant aspect of creative arts courses wrapped up in many conventions, often with the use of pristine white painted boards upon which work is displayed so the decision to move away from tradition in order to deliver a more sustainable event is commendable. Learners very much bought into this approach which is indicative of their commitment to sustainable development.
The College promotes and brings to life the content around ethics which exists within the UAL

"Learners very much bought into this approach which is indicative of their commitment to sustainable development."

(University of the Arts London) qualification they deliver. The weekly drawing days consistently take account of ethical principles. For example, one key drawing activity requires learners to bring into the studio any unwanted clothing items which are hung and displayed as still life drawing subject matter. Following the activity, the clothes are then donated to charities and to clothes banks or swapped as a clothes exchange between the learners.

During the COVID lockdown learners were asked to use found materials as drawing and mark-making media, this resulted not only in the learners expanding their mark-making skills and repertoire, but it also meant that they did not have to purchase expensive arts materials during what was a financially difficult time for many of the learners and their families. Similarly, as part of a sculpture project learners were again encouraged to use only found materials, this negated the need for environmentally messy and problematic use of traditional modelling and three-dimensional media such as clay and plaster.

Wherever possible within the College the practice is always to minimise the use of media which require cleaning or washing of excess into sinks and into the water system.

APPENDICES

Glossary:

AL: GCE Advanced Level
AS: GCE Advanced Subsidiary Level
GCSE: General Certificate of Secondary Education
Dip: Diploma
Cert: Certificate
HNC: Higher National Certificate

Appendix 1. Qualifications with broad ESD coverage

The Learning Aim number is a useful reference allowing the qualification to be identified in the Learning Aims Database which also it also links to the Awarding Organisation websites and specifications.
The Hours are guided learning hours (where defined).

Learning Aim	Cvge	Title	Type	Level	No. of providers	Hours	Enrolments
Social sciences: 15,186							
60184276..		GCE A Level Geography	AL	3	154	360	14,371
6018971X..		GCE AS Level Geography	AS	3	26	180	608
60184103…		GCSE Geography	GCSE	2	9	140	207
Science and mathematics: 2,276							
60309787		GCE A Level Environmental Science	AL	3	37	360	2,099
60309775		GCE AS Level Environmental Science	AS	3	8	180	177
Agriculture, Horticulture & Animal Care: 880							
50104196 60056538		Award in Environmental Sustainability (Ascentis & AIM)	Award	1	8	10	640
50104202		Award in Environmental Sustainability (Ascentis)	Award	2	4	10	50
60003212		Subsidiary Diploma in Environmental Sustainability (QCF) (Pearson BTEC Nat.)	Dip	3	6	360	137
60003200		Extended Diploma in Environmental Sustainability (QCF) (Pearson BTEC Nat.)	Dip	3	1	1,080	19
60003194		Certificate in Environmental Sustainability (QCF) (Pearson BTEC Nat.)	Cert	3	3	180	34
Business, Administration & Law: 132							
60356832		Certificate in Understanding Climate Change and Environmental Awareness (NCFE)	Cert	2	17	110	132

Appendix 2. Qualifications with partial ESD coverage (amber)

Learning Aim	Cvge	Title	Type	Level	No. of providers	Hours	Enrolments
Science and mathematics: 61,830							
60146254…		GCE A Level Biology	AL	3	91	360	29,186
60146242…		GCE AS Level Biology	AS	3	21	180	2,220
60187529…		GCSE Biology	GCSE	2	92	140	3,392
60152552…		GCE A Level Chemistry	AL	2	92	360	23,220
60152564…		GCE AS Level Chemistry	AS	3	23	180	1,616
60187578…		GCSE Chemistry	GCSE	2	24	140	816
6030859X..		GCE A Level Geology	AL	3	26	360	1,259
60308606…		GCE AS Level Geology	AS	3	6	180	121
Social sciences: 24,634							
6014371X..		GCE A Level Economics	AL	3	65	360	13,940
60143721…		GCE AS Level Economics	AS	3	18	180	633
60312233…		GCE A Level Politics	AL	3	110	360	9,311
60312269…		GCE AS Level Politics	AS	3	22	180	750
Engineering & Manufacturing Technology: 10,272							
60311332…		GCE A Level Design & Technology	AL	3	12	360	1,365
60311083…		GCSE AS Level Design & Technology	AS	3	1	180	48
60175886…		Extended Diploma in Engineering (BTEC)	Dip	3	69	1,080	2,028
60008817…		Diploma in Engineering	Dip	2	51	360	1,719
60304509…		HNC in Engineering	HNC	4	118	1,200	1,836
50081548…		Diploma in Engineering	Dip	3	95	1,200	1,453
60066301…		Extended Cert. in Engineering	Cert	2	35	360	977
60175849…		Extended Cert. in Engineering	Cert	3	31	360	846
Health, Public Services and Care: 9,918							
5007801		Extended Diploma in Public Services	Dip	3	161	1,800	5,851

		(BTEC)					
60038913		90 credit Diploma in Public Services	Dip	3	67	900	2,461
50078628		Subsidiary Diploma in Public Services	Dip	3	56	600	1,606
Construction, Planning and the Built Environment: 9,092							
60172010		Advanced Technical Diploma in Plumbing	Dip	3	53	720	1,041
60011348		NVQ Diploma in Domestic Plumbing & Heating (C&G 9189)	Dip	3	76	1,460	1,432
60341464		Diploma in Plumbing & Domestic Heating	Dip	3	68	1,825	1,153
60052703		NVQ Diploma in Plumbing & Heating	Dip	2	24	760	707
60067263		Diploma in Plumbing & Heating	Dip	2	12	570	369
60011221		NVQ Diploma in Domestic Plumbing & Heating	Dip	3	47	680	593
60094321		Diploma in Plumbing Foundation	Dip	2	14	700	591
60125147		Diploma in Plumbing Foundation	Dip	1	13	400	344
60330855		Diploma in Gas Engineering	Dip	3	45	1,128	975
60105276		Certificate in Construction Skills (Plumbing)	Cert	1	10	150	363
60311885		Diploma in Refrigeration, Air-Conditioning and Heat Pump Systems	Dip	2	13	525	313
60311903		Diploma in Refrigeration, Air-Conditioning and Heat Pump Systems	Dip	3	12	557	297
60009123		NVQ Diploma in Installing, Testing & Maintaining Air Conditioning and Heat Pump Systems	Dip	2	11	660	163
60060360		Diploma in Refrigeration, Air Conditioning and Heat Pump Systems	Dip	2	5	510	142
60009093		NVQ Certificate in Servicing &	Cert	3	7	340	20

		Maintaining Air Conditioning and Heat Pump Systems					
60358300 *ZTLOS001*		T Level technical qualification in Design, Surveying and Planning for Construction, including: *T Level occupational specialism in surveying and design for construction and the built environment*	T Level	3	16	1,470	253 *37*
60059850		Pearson Edexcel Level 5 NVQ Diploma in Construction Management (Sustainability)	Dip	5	18	293	573
D6162828		Unit: Introduction to Environmental Sustainability	Units	1	2	-	10
L6000063		Unit: Sustainability in the Construction Industry	Units	2	1	30	6
Agriculture, Horticulture & Animal Care: 1,087							
60344052		Award in Preventing Plastic Pollution (Ascentis)	Award	1	4	20	216
Z0001889		Nonregulated provision, Level 3, Environmental Conservation	Other	3	2	-	136
F5066342		Unit: Sources of Energy	Units	1	1	6	462
A5066341		Unit: Sources of Energy	Units	E	1	20	273

Appendix 3. Other qualifications containing a unit with some ESD coverage

Learning Aim	Cvge	Title	Type	Level	No. of providers	Hours	Total Enrolments
Preparation for Life & Work							
6008456X		Award in Personal Development for Employability	Award	1	27	120	*1,263*
6008490X		Certificate in Progression	Cert	1	8	205	*377*
6018937X		Award in skills for Vocational Studies	Award	1	6	(90)	*118*
Business, Administration & Law							
6013608X		Diploma in Business Administration	Dip	3	121	432	*934*
Arts, Media & Publishing							
6006822X		BTEC First Extended Certificate in Art & Design	Cert	2	8	360	*152*
Engineering and Manufacturing Technologies							
6000602X		Cert in preparation for working in the engineering manufacturing industry	Cert	2	3	130	*106*
60082434 H5041093		NVQ Diploma in Construction & Building Services Management & Supervision (Sustainability) Pearson Unit 7. Innovation in Sustainable Construction	Dip	4	23	40	*573*

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