Exploring eco-civic competencies with young people:

The TAKE ACTION report.

Sophie Laggan, Lauren Caple, Laura Fogg-Rogers 05/09/2024

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1 Introduction

1.1 Nurturing capable eco-citizens and sustainable futures

Sustainable Development competencies are espoused by the United Nations as learning objectives for ages, essential for living and working effectively and ethically in a rapidly changing society and global climate (UNESCO, 2017). Such competencies, which include self- and cultural-awareness, teamwork, problem solving, communication, futures literacy, collective action and critical thinking, are seen as crucial for young people to navigate uncertainty, manage their mental health, and contribute to peaceful, healthy futures (Shtaltovna et al., 2024; Brentnall et al., 2017; Fayolle, 2013; Young, 2014). Many scholars have been exploring similar

learning objectives and modifying them to suit their contexts as it is increasingly realised that inner development is key for outer sustainability (Shtaltovna et al., 2024; Bianchi et al., 2022; Stafford Ocansey, 2022; Bacigalupo et al., 2016). They are also highly desirable for the 21st Century labour market (Souto-Otero, 2023; Suarta et al. 2017), helpful for employers to update or create new job profiles and for creating green jobs that currently do not exist (Bianchi et al., 2022).

Despite extensive support and even a political mandate (Bianchi et al., 2022; UNESCO, 2017) for their inclusion throughout education, many European young people (aged 15-30) feel the system does not adequately equip them with these competencies (Reilly et al., 2024; European Union, 2019). Enterprise education (EE) offers one potential route for embedding these competencies within education as the system increasingly aligns itself with business interests and the green jobs agenda (Green Jobs Taskforce, 2021, UK Government). However, the process by which this integration occurs and the content offered are key consideration to ensure EE continues to reposition itself beyond its ubiquitous competitive format and neoliberal associations (Rosário and Raimundo, 2024; Brentnall et al., 2017; Mccafferty, 2010; Amatucci, Pizarro, and Friedlander, 2013), so that the future workforce is equipped to pursue ethical, fair and deeply green professions and thus a "just transition" (Abram et al., 2024). Sustainability without entrepreneurship runs the risk of focusing too narrowly on environmental challenges and individual behavioural responses. While entrepreneurship without sustainability runs the risk of continuing with business-as-usual, perpetuating competitive solutions to predominantly social challenges.

Thus, the authors propose that adopting an entrepreneurial design thinking approach to sustainability education and a green entrepreneurship focus to careers education can further the integration of Target 4.7 of the Sustainable Development Goals and a transformation of the practice of education, from one centred on a knowledge economy (*learning to know*) alone to one centred on competency development within schools and curricula that act to prefigure the future (by *learning to know, learning to do, learning to live together and learning to be*, Delors, 1998). While the scope of this project is not able to explore all the dimensions of education (teacher training, assessments, leadership, etc) it did attempt to explore the content of learning and what impact green entrepreneurship lessons may look like, with an emphasis on competency development as the learning objectives. The following projects contribute to what this might look like in practice in different contexts.

2 Career aspirations

The main theoretical concept explored during this project was career aspirations. Historically, the main influences on the educational and career aspirations of students seem to be personality types, the view that aspirations are a feature of an individual's psychology, and socio-economic factors (Swell and Hauser, 1975; Holland, 1973; Crites, 1969). For example, uncertainty in achievement may benefit socio-economic attainment if young people can explore their pathway through further education, for example, or diminish attainment if it leads to "aimlessness" (Staff, Jeremy, Harris, 2010). More recently, social cognitive learning has been considered a key influencer of aspiration. This includes personal cognitive variables (e.g., self-efficacy and outcome expectations) and contextual factors (demographics, social class, schooling, social supports (friends, family, role models) and barriers) (Bandura et al., 2001; Lent et al., 2000; Laggan and Fogg-Rogers, in preparation). Typically, the first set of variables receives more research attention than the latter set (Lent et al., 2000). For instance, people will pursue careers that are of value to them and in which they think they will be successful (Eccles, 1987; 2011). If they do not value sustainability, e.g., because they do not think climate change is an issue worth addressing, and do not think that they will be successful in addressing the issue through a green job then green job motivations are likely to be low. However, as one of the authors' own research has shown, if the value of sustainability can be normalised within educational settings, and activities offered that attend to diverse contextual factors, young people, through practical social-ecological learning (e.g., team problem solving on an environmental challenge), can begin to further connect their interests and passions with what the world needs and what they can be paid for (Laggan and Fogg-Rogers, in preparation). This project aimed to take this understanding further, using competency development as the entry point for supporting young people to make these connections, with reflection on what more is needed to embed this type of learning in the wider educational system.

3 Project background

The lessons were developed through TAKE ACTION, a one-year public engagement project aimed at empowering young people to take effective climate action and think critically about future careers. Funded by Enterprise Educators UK, the project sought to support young people (aged 16-24) to develop eco-civic competencies (Bianchi et al. 2022) and raise aspirations by connecting the issues and interests they care about to green entrepreneurial career pathways and diverse role models (Laggan and Fogg-Rogers, in preparation). Bianchi's framework was

chosen over the Sustainable Development (SD) competencies model in this study as Bianchi specifically explores entrepreneurial competencies linked to sustainability (what they call "green competencies").

The project built on from two predecessor initiatives. Inspire Sustainability (ibid), which took a whole-school approach to integrating Education for Sustainable Development, of which SD competencies are a part and link that to green careers policy. And CAH-OOT (Laggan et al., 2022), which co-created training for young people (18-24-year-olds) to communicate effectively about issues that matter to them in relation to climate action and behaviour change. Inspire Sustainability highlighted the need to tailor learning to young people's existing knowledge and experiences, while CAH-OOT provided the methodological foundation intended for use in TAKE ACTION.

The following sections detail the approach taken to engagement and evaluation, followed by results and next steps.

4 Methods and materials

This section outlines the approaches to engagement (recruitment and activities), evaluation and data analysis, including an honest account of how approaches changed according to unfolding circumstances.

4.1 Engagement

4.1.1 Recruitment

The project reached out to educational settings through existing educational networks, aiming to cover a variety of locations and demographics (Table 1). The intention was for pupils to be aged 16 and over but the researchers did not have enough time to dedicate to widening their search to attract more colleges and universities. As such, one activity was targeted to the final year students at a secondary school, and another to all students at a secondary school.

Table 1 Educational settings recruited and their demographics.

	University	School 1	School 2	College
Ages	18-60+	11-16 years	11-16 years	16-18 years
Local Governance Authority	South Gloucestershire	North Somerset	Bristol	Bristol

Total Number of Students	39,912	1,021	1,331	2,000
Male; Female	44.8% 55%	49.2% 50.8%	Not known	Not known
Global majority; White	32% 65%	Not known	Not known	23%
% Students with Special Educational Needs and Disabilities (UK school average=17%)	23%	33.8%	37%	12%
% Pupil Premium/ Disadvantaged students (UK school average=25%)	30% from low participation neighbourhoods	21%	29%	18%

UK statistics from UK Gov (explore-education-statistics.service.gov.uk) and education setting websites.

The project also aimed to recruit diverse students from the Team Entrepreneurship (TE) degree programme to act as green social entrepreneurship role models and coach social action projects (as in CAH-OOT). However, a few factors made this too challenging to be effective, including shorter lead in times and shorter session times than expected. As such, there was insufficient time to advertise or for pupils to consider the sessions worth their while. In the end, only one ambassador was recruited for activity 1 (below). In activity 4, the only session embedding social action, the researchers offered to act as coaches in lieu of students.

4.1.2 Activities

The project aimed to engage each group of students in a workshop series that supported them, with team coaches, to deliver social action projects in their educational setting. This was to mirror a design tested in a prior project (Laggan et al., 2022a), this time testing its effectiveness in enhancing eco-civic competencies and its potential as a resource for schools based on teacher input. However, in the end, the approach to engagement had to be tailored to the requirements of the setting and the age of the youth group. This meant young people had varied degrees of involvement in shaping relationships and ecologies and in testing out competencies. The following table lists the approaches taken, along with the key competencies that the researchers anticipated would be exercised. Note that approach 4 also included a short meditation exercise at the start of the session but this was not evaluated.

Table 2 Engagement activities, ordered according to degree of participation in decision-making.

Approach taken	1) Awareness raising	2) Self-reflective	3) Knowledge co-production	4) Participatory
Description (items in bold represent entrepreneurial specific activities)	Stall at Green jobs fair. Challenging ideas about jobs and their potential role in sustainability, **sharing examples of green enterprises**. Stall hosted by Team Entrepreneurship coach and student.	Lesson. Centred on supporting pupils to align interests and passions to what the world needs and what they can be paid for, using **Ikigai worksheets**. Started with a video on Regeneration, followed by **examples of green social enterprises** and ended with action planning.	Lesson. Encouraging critically thinking on how sustainability can be applied to non-conventional sectors (arts, music, fashion, food, sports), and using **Design Thinking** to reduce Scope 3 emissions (behaviours).	Workshops. Supporting young people to lead social action projects. Week one included: Tree of expectation; Behaviour change theory; Deciding on a topic; Asset mapping; Power analysis; The user's journey. Week two focused on: **Learning about green social entrepreneurship**; **Business model canvas**; Reflection questions. Participants were also given a climate communications toolkit (Laggan et al., 2024b) to support their social actions.
Time and date.	3-minute slots, all day activity; Spring 2024	1-hour lessons; Summer 2024	2-hour lessons; Spring 2024	2x 2-hour workshops; Winter 2023
Audience	Year groups (7-9), aged 11-14	Year 12, aged 16-17	Year 10, aged 14-15	Volunteer university sustainability committee, aged 18-26.
Setting	School hall	Classroom	Classroom	Classroom
Existing competence	Variable	Medium	Low	High
Key eco-civic competencies exercised	Valuing sustainability Critical thinking	Valuing sustainability Valuing fairness Critical thinking Individual initiative	Critical thinking	All

In the first activity, researchers participated in a Green Jobs fair that they had previously attended on a previous project. On the second activity, following an inspirational video and sharing of entrepreneural solutions to sustainability challenges they used an activity commonly used the enterprise-focused researcher with their pupils called Ikiagi. Ikiagi is Japanese philosophy that translates to "a sense of life worth living". According to this philosophy, a long and fulfilled life can be achieved if you align what you love, with what you are good at, what the world needs and what you care about. Given its central focus on inner development for outer sustainability it is being picked up as an essential tool among the EE/SD education research

community (Planck et at., 2024). The third session again drew from a commonly used entrepreneurial tool to solve challenges and again was applied in a school familiar with the research team. Lastly, the most participatory session included various tools derived from community organising and practical sustainability, developed by the sustainability-focused research and was delivered to a youth group within the researchers university.

4.1.2.1   Introducing 'green jobs'

As the project evolved, green jobs became a key focus of discussion during engagements. This was to involve young people in ongoing policy implementation in this area: did young people think the definition was sufficient? What might be missing? How might they create their own definition, based on their interests and passions? The researchers already had some evidence to suggest that currently young people think the definition is not well understood, and more fundamentally they may not care about the environment and climate action as much as they do other pressing issues (e.g., cost of living crisis) or immediate interests (e.g., social media, sports) (Laggan and Fogg-Rogers, in preparation; Basis Social, 2023). As mentioned in section 2, they are likely unmotivated to pursue green careers because sustainability is not normalised on campus or through place-based practical group action. And this is supported by the UN that reports Education for Sustainable Development integration across teaching, assessments, curricula and policies remains very low among countries (UN Stats, 2022).

In the school and college settings, each group was presented with the broad definition of green jobs. In schools, this was after a discussion about what they thought they are, while in the college they were asked after the session whether they thought the definition was sufficient to address what the world needs for its survival and thrive-ability.

This is the definition they were presented with an amalgamation of definitions listed by the UK Government's Green Jobs Taskforce (2021):

A green job is currently defined as:

- Producing goods and services for environmental protection and restoration (e.g., marine biologist, national park ranger, agroecology farmer, an architect that designs living walls, full of plants, an environmental lawyer)
- Lowering greenhouse gas emissions (e.g., renewables, clean technology, transport, reforesting)
- Supporting community adaptation to climate change (e.g., flood defences, improving the design of houses)

- Good quality and decent (e.g., well paid, care for staff wellbeing)

Various good green jobs linked to entrepreneurship were introduced during the engagements (Table 3). In the schools, they were used to help inspire pupils to think of solutions to challenges in their areas of interest, while in colleges they were used for inspiration to help them reflect on their own aspirations and how they might align.

Table 3 List of entrepreneurial jobs and ventures introduced during workshops.

Forest Green Rovers	The world's most sustainable football team and stadium.
Transition Towns	A global movement aiming to transition urban areas away from fossil fuels.
The Engaging Kenyan Youth in Agriculture and Nutrition (EKYAN) programme of Generation Unlimited	An organisation aiming to connect the world's 1.8 billion young people and connect them to opportunities for employment, entrepreneurship and social impact.
Too Good To Go app and B Corp	A food waste app reducing food waste and supporting local businesses.
Patagonia and B Corp	A sustainable clothing brand fighting fast fashion.
OMS Tech	A computer recycling business founded by a TE student.
Ocean Raye	A recycled jewellery company, using collected plastic from beach cleans. Founded by a TE graduate.

4.2 Evaluation: intended and actual

This section details what the researchers set out to achieve from the evaluation (Table 4), and what was achieved in practice (Table 5).

Table 4 Intended evaluation approach, used across all engagements.

	Pre- and post- skills audit	**Pre- and post- generic learning outcomes**	**Teacher interviews**
Description	To assess eco-civic competency development. A social action scenario will be	To assess changes to aspirations in relation to values, attitudes,	To assess teachers' views on the integration of sustainability and entrepreneurship within

| | created to test how young people respond. | knowledge, skills, behaviours. | education, and potential barriers and ways forward. |

4.2.1 Generic Learning Outcomes

The evaluation drew from previous studies in its approach to outcome evaluation (Laggan et al., 2024; Fogg-Rogers et al., 2024; Sardo et al., 2024), using Generic Learning Outcomes (GLO, Arts Council England, 2008) as the framework for question formation. GLOs, consist of values, attitudes, knowledge, skills and behaviours, and are studied to see how they change because of learning processes. Competencies map onto this framework, as they are not just about mindsets or skills but also action. They are about feeling equipped to act on something that someone cares about. And this case the focus has been on green jobs and entrepreneurial actions to address sustainability challenges. The aim was to obtain pre- and post-data from each engagement; however, this was not always possible due to technological and/or activity time constraints.

4.2.2 Skills audit

Initially, GLOs were to be tested in the pre- and post- survey with a dedicated 'skills audit', building on Laggan et al., 2022a and b. The word 'skill' is used as it is more easily understood than competencies. A social action scenario was created, with survey participants asked – pre and post - to respond to corresponding statements, each designed to reflect the essence of the 15 entrepreneurial competencies defined by three leading (eco-)civic competency frameworks (see section 5). In addition to these 15, one more was added to reflect resilience: the ability to
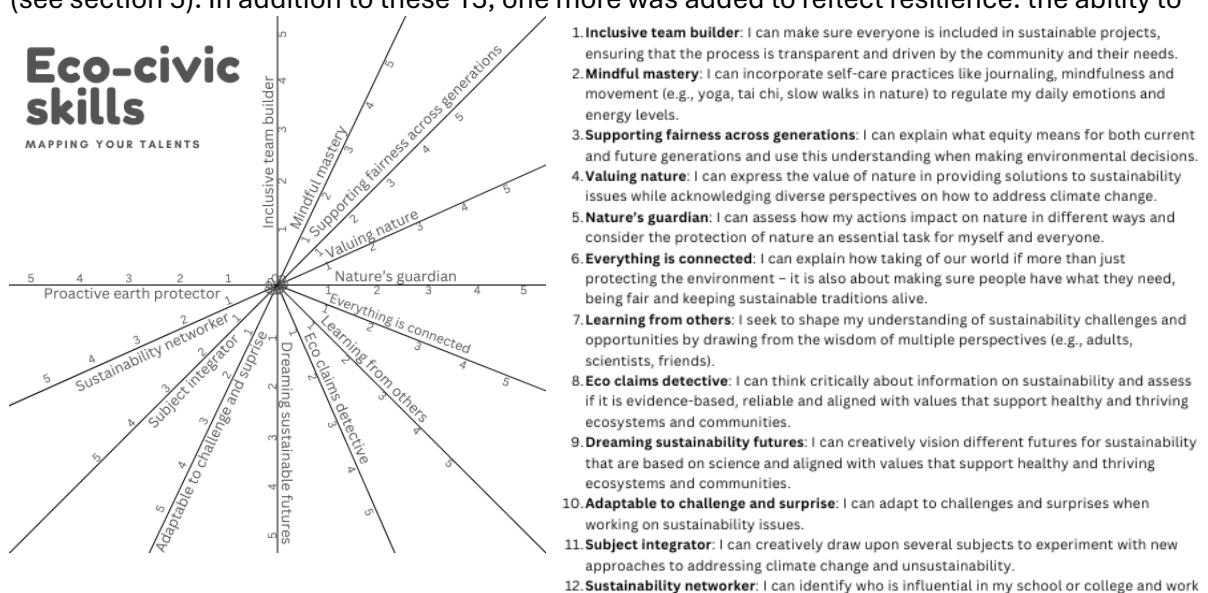

1. **Inclusive team builder**: I can make sure everyone is included in sustainable projects, ensuring that the process is transparent and driven by the community and their needs.
2. **Mindful mastery**: I can incorporate self-care practices like journaling, mindfulness and movement (e.g., yoga, tai chi, slow walks in nature) to regulate my daily emotions and energy levels.
3. **Supporting fairness across generations**: I can explain what equity means for both current and future generations and use this understanding when making environmental decisions.
4. **Valuing nature**: I can express the value of nature in providing solutions to sustainability issues while acknowledging diverse perspectives on how to address climate change.
5. **Nature's guardian**: I can assess how my actions impact on nature in different ways and consider the protection of nature an essential task for myself and everyone.
6. **Everything is connected**: I can explain how taking of our world if more than just protecting the environment – it is also about making sure people have what they need, being fair and keeping sustainable traditions alive.
7. **Learning from others**: I seek to shape my understanding of sustainability challenges and opportunities by drawing from the wisdom of multiple perspectives (e.g., adults, scientists, friends).
8. **Eco claims detective**: I can think critically about information on sustainability and assess if it is evidence-based, reliable and aligned with values that support healthy and thriving ecosystems and communities.
9. **Dreaming sustainability futures**: I can creatively vision different futures for sustainability that are based on science and aligned with values that support healthy and thriving ecosystems and communities.
10. **Adaptable to challenge and surprise**: I can adapt to challenges and surprises when working on sustainability issues.
11. **Subject integrator**: I can creatively draw upon several subjects to experiment with new approaches to addressing climate change and unsustainability.
12. **Sustainability networker**: I can identify who is influential in my school or college and work

Figure 1 Skills audit developed by the researcher team in preparation for engagements, adapting Bianchi's competencies to suit a younger audience.

walk away. Resilience is often referred to as staying with challenging situations, but sometimes the best course of action is to move on (complete list can be found in Table 8).

This assessment approach was achieved only in the participatory engagement (number 4 in Table 2). As mentioned, school/college constraints inhibited this in the other sessions. The researchers adapted the skills audit wheel for a more rapid assessment, for example through researcher reflective logs; however, it was decided that only green job and entrepreneurial knowledge and aspirations would be measured across secondary education settings. This was captured in surveys or in verbal feedback.

4.2.3 Staff interviews

Lastly, the original plan was to further gather interviews from staff to assess their views on the integration of sustainability and entrepreneurship within education, and potential barriers and ways forward. This was dropped because of limited contact time with staff (often there was a different teacher present in each session) and the lateness of delivery in relation to the submission of the final report. Delivery had already been delayed by a year due to challenges in securing internal funding to cover staff time.

Table 5 Actual evaluation approach, pragmatically selected to match engagements.

Approach taken	1) Awareness raising	2) Self-reflective	3) Knowledge co-production	4) Participatory (co-production of knowledge and social order through learning)
Evaluation method(s)	Self-reflective log	Pre and post survey of knowledge and aspirations, verbal feedback, and reflective log	Pre and post survey of knowledge and aspirations, post-it feedback, and reflective log	Pre and post survey with skills audit and activities evaluation
Key eco-civic competencies exercised	Valuing Sustainability Critical thinking	Valuing sustainability Valuing fairness Critical thinking Individual initiative	Critical thinking	All

5 Comparing competency frameworks

In the fields of sustainability and entrepreneurship, various frameworks are being co-created to assert the competencies needed for the future. Three of the most well-known are: UNESCO (2017)'s sustainable development and global citizenship competencies, included in Target 4.7

of the Sustainable Development Goals; Bacigalupo *et al.* (2016)'s EntreComp framework and Bianchi *et al.* (2022)'s GreenComp framework. While the first is the most widely used in international assessments of the education system and its contribution towards a just transition, it is broad and aspirational and does not include work-related skills like finance and economic literacy or motivation/initiative. Bacigalupo's EntreComp framework, meanwhile, includes actionable and progressive learning outcomes but does not include sustainability and justice as core aims. Lastly, Bianchi's GreenComp framework is gaining popularity within the EU as it aligns with the EU Green Deal and bridges both UNESCO and EntreComp. However, it is not specifically focused on entrepreneurship and may end up being used to teach individual competencies separately. In this project, the focus was initially centred on EntreComp as it is almost project-focused nature. However, aspects were drawn from all three to ensure sustainability values, political action and critical thinking were included where possible.

Table 6 Comparing key competency frameworks relating to entrepreneurship and sustainability

Author	UNESCO, 2017	Bacigalupo et al. 2016	Bianchi et al., 2022
Focus	Sustainable development and global citizenship	Entrepreneurial	Green (entrepreneurial)
Competencies, sorted in accordance with UNESCO framework	**Systems thinking**	Ethical and sustainable thinking	Systems thinking
	Anticipatory	Vision	Futures literacy
	Normative	Coping with ambiguity, uncertainty and risk	Embodying sustainability values (including fairness and nature promotion)
	Strategic	Spotting opportunities; planning and management	Problem framing
	Collaboration	Valuing ideas; mobilising others; working with others	Collective action
	Self-awareness	Self-awareness and self-efficacy	Adaptability
	Integrated problem-solving	Creativity	Exploratory thinking
	Critical thinking	-	Critical thinking
Competencies not covered by UNESCO		Learning through experience; Motivation and perseverance; finance and economic literacy; taking the initiative	Individual action, political agency

6 Ethics

Ethics was obtained for this project from the University of the West of England's research ethics committee (CATE-2324-275). All pre-higher education (HE) educational settings agreed to take part in the project by completing an institutional consent form and participant information with opt-out consent forms were sent home to parents for all pupils under the age of 18. The university group involved in this project were able to read their own participant information sheet and sign consent as they were all over 18. As the group was voluntary and operated outside of university timetabling, their programme leaders did not need to be informed of their participation.

In addition to attending the activities/lessons offered in this project, students were provided with information about the project, GDPR and data privacy information via the anonymous online survey used to capture pre- and post-learning. Pupils were asked to provide a code to link pre- and post-survey responses. Participation in the evaluation was optional but encouraged. Although asked, no pupils had any questions about the survey or information provided.

7 Data analysis

Quantitative data from the surveys was analysed in Microsoft Excel to generate descriptive statistics. Engagement numbers were tallied during the engagements and reflections from students and the research team were synthesised in Microsoft Word. Given the small evaluation dataset, and the lack of comparability, no further analysis was performed.

8 Results

8.1 Participant numbers and backgrounds

In total, 669 young people were engaged in this project, far exceeding the target of 300 young people. 64 of them participated in the evaluation, representing 10% of the sample population, far fewer than the proposed 66% (N=200).

Table 7 Participant numbers for each activity and associated evaluation

Approach taken	1) Awareness raising	2) Self-reflective	3) Knowledge co-production	4) Participatory
Numbers	Participants: N=600	Participants: N=29	Participants: N=28	Participants: N=12

	Evaluation: 2 researcher self-reflective logs (RSRLs)	Evaluation: N=27 and 2 RSRLs	Evaluation: N=26 and 2 RSRL	Evaluation: N=11, pre and N=7 post

A mix of ethnicities and genders were present in each of the sessions, estimated to be 15% African/Afro-Caribbean, 5% Asian, 5% Arab, and 75% white, with 55% female and 45% male, It was not always possible or appropriate to gather this information, but it is believed the demographics reflect the diversity of each educational setting, albeit an underrepresentation from Arab ethnicities. Student ages ranged from 15-26. It was observed that there were more female students in the university group, which is typical for eco groups. As shown in Table 1, institutions represented a mix of socio-economic levels. It is unclear if this diversity is reflected in the participants involved in this study. Lastly, while pre-existing aspirations or competence in sustainability and entrepreneurship was not obtained formally, the researchers believed levels varied widely, with those interested increasingly proportionately to the degree of participation (see Table 7).

8.2 Participatory workshop series with university students

Figure 2 Photo taken of the sustainability committee during the first workshop

The first activity of the project (number 4 in Table 7), a workshop series to a university youth Sustainability Committee, was delivered in Winter 2023. Two 2-hour sessions were delivered to the voluntary group, with a gap of about one month in between, to support them to develop their social action project (part of their requirement for the committee) and to reflect on the role of

social entrepreneurship and its approaches in supporting their work. Despite the offer to provide free coaching for the students as they developed their social action projects, they never made use of the opportunity to be coached.

The researchers found it easy to engage the group: one third had previously participated in social action projects through formal education (and two of these had also participated outside of formal education) and felt comfortable with teamwork. This contrasts to previous work, where pupils in college had no experience of teamwork (Laggan et al., 2022). We do not have data to explain why this group has such experience, but it could have been that they were part of an eco club or committee previously.

8.2.1 Assessment of activities

Workshop attendees rated all activities highly (Table 4), with highest scores for content, enjoyment, behaviour change theory, power mapping of stakeholders and the tree of expectation. The tree exercise encouraged pupils to write on post-it notes what competencies they brought (roots), what they hoped to gain (branches), and their principles for effective group work (trunk). In an email shortly following the first workshop, the committee organiser said:

"They had many positive things to say about the training".

Table 8 Evaluation of activities delivered, 1 = poor, 5 = fantastic.

Evaluation of activities	Score
Content	4.4
Enjoyment	4.1
Inspiration	4
Creativity	4
Skills development	4
Confidence boosting	4
Tree of expectation	4.3
Behaviour change theory	4.2
Deciding on a topic	3.8
Power mapping	4.1
The user's journey	3.6
Learning about social entrepreneurship	3.6

Business model canvas	3.7
Reflections	3.9

8.2.2 Aspirations

As these participants self-identified as environmentalists, the phrasing of the questions on aspirations was geared towards social entrepreneurship and how it relates to climate action. Participants already agreed that (Q4) social entrepreneurship is important, (Q9) the skills used are useful for climate action, (Q2) would consider working for a social enterprise in the future and (Q7) believed they had the skills to do so, and (Q8) thought diverse people worked in them. This, despite not knowing of a social entrepreneur within their close network (Q6). Knowledge about social entrepreneurship (Q1) and the steps to get a such a job (Q3) were low prior to engagement. While participants were undecided about setting up their own enterprise (Q5) their views became clearer after the engagements: that they are unlikely to go it alone. This may in part be due to the social nature of the training, reflected by the consistently high agreement that they would consider working *for* a social enterprise. This finding also corroborates the initial assertion of the project, which argued this approach could "reposition enterprise education beyond the ubiquitous competitive format and neoliberal associations" (from EEUK funding application). These increasingly outdated views and practices of entrepreneurship would have once conjured up/encouraged individuals to set up their own ventures in pursuit of profit, first and foremost.

The biggest change, according to evaluation participants, was in their knowledge of social entrepreneurship and the next steps needed to get a job in this field. They also were more likely to agree that diverse people work in social enterprises following the engagement, suggesting that the presentation of diverse social enterprises, set up by people with backgrounds typically underrepresented in entrepreneurship, may have influenced this.

Table 9 Pre- and post- entrepreneurial aspirations. 1 = strongly disagree, 5 = strongly agreed

Entrepreneurship aspirations	Pre	Post
1) I know quite a lot about social entrepreneurship	2.1	**3.1**
2) I would like to work for a social enterprise in the future	3.9	4
3) I know the first steps I need to take to get a job in social entrepreneurship	1.9	**2.8**
4) I think social entrepreneurship is important	4.3	4.1

5) I would like to set up my own social enterprise one day	2.7	1.8
6) I know someone close to me that is part of a social enterprise	1.8	NA
7) I think I have the skills I need to get a job in a social enterprise	2.8	3.1
8) Diverse people work in social enterprises	3.4	**4.1**
9) Social entrepreneurship skills are useful for climate action	4.2	4.5
TOTAL		

8.2.3 Competencies

Changes were also detected in eco-civic competencies. Most notably, evaluation participants said that they would likely be more 'patient through setback', better able to 'know when to walk away', would be more resourceful, and better able to excite others. The design of the session, which included a meditation and mindful pacing, may have set the scene for participants to report improvements in their patience and resilience. The asset mapping and power mapping tools may have helped pupils feel better resourced. While the communications toolkit (Laggan et al., 2024b) and behaviour change theory may have enhanced their ability to excite others.

Table 10 Pre- and post- entrepreneurial competencies

Areas	Competencies	Statements	Pre (N=11)	Post (N=7)
1.Ideas and opportunities	1.1. Spotting opportunities	- I feel able to identify needs in my community and surroundings that have not been met	3.4	3
	1.2 Creativity	- I feel able to build on what already works	3.8	3.8
	1.3 Vision	- I feel able to envision a better future	3.9	4.4
	1.4 Valuing ideas	- I can assess how the outcomes bring value to my place of education	3.5	4
	1.5 Ethical and sustainable thinking	- I can assess the consequences and impacts of my ideas	3.3	3.8
2. Resources	2.1 Self-awareness and self-efficacy	- I can identify my own strengths	3.4	3.6
		- I can identify my own weaknesses	4.3	4.0
		- I believe in my own ability to generate positive outcomes in the delivery of this project	4	3.8

	2.2 Motivation and perseverance	- I see the task as a challenge to do my best	4.1	4.4
		- I feel able to persist even after setbacks		
		- I feel able to remain patient even after setbacks	3.6	4.2
		- I can look for help when I am having difficulty achieving what I have decided to do	3.6	**4.4**
			3.4	3.8
	2.3 Mobilising resources	- I know how to find the right people for the task	2.9	3.4
		- I feel able to get all the resources needed for this project	2.9	**3.8**
	2.4 Financial and economic literacy	- I feel able to work out costs for the project	2.3	**3**
	2.5 Mobilising others	- I feel able to persuade the people in power that can make the necessary changes	2.7	3.2
		- I feel able to excite people in my place of education about this project	2.8	**3.6**
3. Into action	3.1 Taking the initiative	- I am up for the challenge	4.4	4.6
	3.2 Planning and management	- I feel able to define clear and measurable goals for the project	3.5	3.8
		- I feel able to define priorities for action	3.5	4
	3.3 Coping with uncertainty, ambiguity and risk	- I feel confident in being able to test out several ideas before we settle on one	3.2	3.4
		- I feel able to adapt to unforeseen changes	3.4	4
	3.4 Working with others	- I feel able to distribute tasks among the team	3.6	3.2
		- I feel able to agree upon ways of working together to minimise conflict	4	4
	3.5 Learning through experience	- I can come up with possible solutions to challenges we may encounter along the way	3.4	3.4
		- No matter the outcome, I see this as an opportunity to learn	4.7	4.6

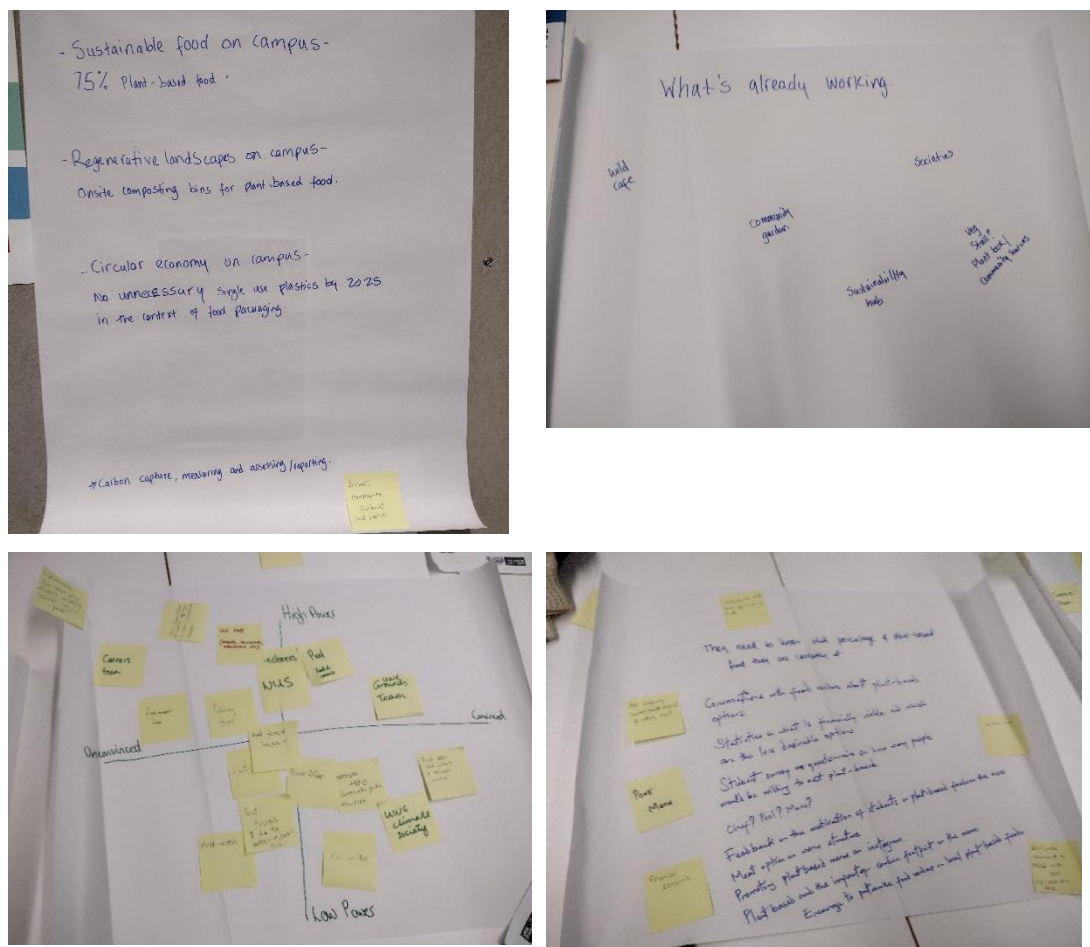|	Additional: resilience	I know when it is the right time to walk away from the project	2.6	**3.8**

Figure 3 A selection of activities from the first workshop. L-R: Deciding on SMART objectives, mapping power, determining assets, creating the user's journey of the powerful person needing to be influenced.

8.3 Secondary school green careers stall

The careers stall engagement at the secondary school during their Eco Jobs Fair (activity 1, Table 7) was delivered next, in spring 2024. It consisted of preparing a lightening talk (90s) with a subsequent 90s for pupils to ask questions before moving on to the next stall. It proved challenging due to the extremely short engagement time of three minutes, decided by the organisers. This made it impossible for any in-depth engagement, with a focus instead on exposing young people to how most jobs can be made green with enough imagination. Due to the rapid nature of the activity, it was assessed through self-reflection only, captured at the end of the day.

8.3.1 Assessment of activities

Analysis showed how the activity proved a steep learning experience for both the entrepreneurial lecturer and the role model, having to constantly adapt to different ages and levels of engagement. They reflected for instance that year 8s (12–13-year-olds) were in general the most engaged group, more interested in listening and answering questions. They reflected how some props may have improved engagement at the stall, but noted it is hard to think what props could be used when the concept is so broad. Neither had previous experience of engaging this age range.

Two key themes emerged from the reflective log, one relating to the message and the messenger and the other relating to connecting the concept to pupils' interests.

8.3.1.1 Messaging and messenger

A key takeaway was the importance of adapting the message and the importance of language, e.g., the literal interpretation of the word "green" – farming, gardening, trees, grass etc. The word "green" did cause some confusion, but the presenters felt they needed to use this term to stay "on message" with the school's approach as the event had been branded as a "Green Jobs Fair". They did tailor the message, however, especially among Year 7s (11-12-year-olds) where they took a more direct approach to speaking - i.e. fewer open questions and more information sharing, linking the information to their hobbies, such as gaming, sports etc. A small number of students used terminology like "carbon neutral" and mentioned technical green jobs, e.g., renewable energy and recycling. The terms used may reflect what pupils were learning at the time. The presenters believed that a real-life example from a role model improved their understanding of the concept.

8.3.1.2 Connecting with interests

There was mixed knowledge about terms such as "fast fashion", but several students were able to make a link to real-life examples such as Shein and Primark. "Clothes that grow with a child" was an example given by a student of a sustainable business model that they had come across.

Football was a common theme in terms of hobbies, building on previous research (Laggan and Fogg-Rogers, 2024, in preparation), which the presenters related to the pre-prepared stadium example. Quite a few students did not express their interests however, with the presenters reflecting that perhaps they struggled to link them to sustainability or did not have hobbies that came to mind.

8.3.2 Aspirations and competencies

It is impossible to assess aspirations and competencies from such a short engagement. In previous work, this engagement was combined with many other types of engagements (lessons, pop-up stalls, events) to create continuity in messaging and opportunities to explore the issues in-depth (Laggan and Fogg-Rogers, 2024, in preparation). However, the delivery team did believe that some ideas were challenged and that some pupils will have had to think critically about what makes a job green. They were also provided with handouts explaining key issues, including what 'greenwashing' meant.

8.4 Secondary school lesson

The two secondary school lessons (activity 2, Table 7), each lasting 100m, introduced pupils to the idea of green social entrepreneurship, including examples linked to broad youth interests (Laggan and Fogg-Rogers, 2024). As a starter activity, pupils were asked to jot down all the green jobs they could think off on flipchart paper. Then, following a short introduction, pupils, in groups, chose from a limited number of topics (fashion, food, media, sport) which they were to explore for the rest of the session. They had fact sheets to read about the environmental impact of the relevant industry and then tasked with thinking about all the activities and things/services they produce that may cause emissions and list them on flipchart paper (although pupils tended to jump to solutions first). They were then introduced to Scope 1-3 emissions and asked to select the polluting behaviours (Scope 3, as these typically contribute to most of a company's emissions) and develop a communication campaign to encourage/incentivise the actors to reduce their emissions. The communications campaign was presented as the 'prototyping' stage of the Design Thinking Process. Along the way, examples were given by the researchers including [PledgeBall](#), Coldplay's [low-carbon tour](#), McDonald's use of biofuels from waste frying oil, etc when appropriate, to inspire pupils to think creativity.

8.4.1 Assessment of activities

The researchers reflected that they found it particularly challenging to engage pupils at this school. Despite having more time with the pupils and making a conscious effort to keep the session interactive, participatory and offer relevant green job examples, there were visible signs pupils did not want to be there (put heads on desks/pretended to be asleep/talking over the presenter in groups). In each class about 10-30% were Special Educational Needs pupils (SEN). SEN pupils were supported with an assistant however many did not engage in the activity. An 'energiser' activity that had been planned was removed in-session as this would not have

worked with SEN pupils. These challenges meant more time was spent on managing behaviours and adapting to needs than was expected. The researchers spoke with others running sessions on this day and they faced similar challenges. It was also later revealed that pupils who attended this day had to be there as they hadn't chosen a job placement. This, added to the fact some pupils said the session had been advertised as one on engineering, may have further complicated matters. Despite this, the researchers did find the second group to be more engaged than the first and overall, most groups were able to write some ideas down (Table 11).

Table 11 Problem framing and visioning solutions, ideas from each group.

	Group 1: music	Group 2: sports	Group 3: sports	Group 4: fashion	Group 5: food industry
Sources of emissions	Vehicles – travel to airports/concerts; private jets; cruises; ferries; bus tours People – Taylor Swift, overseas fans, fans; using costume for one concert and then throwing them away (fast fashion); Venues – food waste, moving equipment, Coachella, lights and stage props, stage effects (e.g., fake smoke)	Transport – using buses to transport players around Stadium – they require fossil fuels to use heating and energy Products – Nike with their trainers from recycled plastic.	-	Vehicles, planes, materials, chemicals, throw-away fashion	Transport, pesticides, fertilisers and chemicals used, food waste, people.
Reducing emissions	Encourage artists to take low carbon options and incentivise fans to watch online (e.g., cheaper ticket). Online concerts were made popular during Covid. Electric buses. Taking apart a costume and rearranging it or selling it. Using fewer props. Travel fewer miles by plane.	Make t-shirts recyclable. Put ads on aps for people to walk to stadiums. Reduce the cost of tickets if people bike or walk.	Vegan food in the canteen, electric tour buses to away games, improve how players get home. Extension to the stadiums built using sustainable materials. "No more sports"	Take clothes to charity, pass on clothes, turn them into something	They need to lower their carbon footprint.

Pupils were asked to write down the key takeaways from the session. Not all students provided responses but those that did (N=6) mentioned that they were surprised by the number of opportunities out there to help the planet, and that many things they are interested in could be green. They also enjoyed learning about how to address problems that interest them.

"There are more green jobs out there than you think there are." (pupil 1)

"A lot of things you are interested in could be green." (pupil 2)

"Learning how to tackle problems such as fast fashion." (pupil 3)

One suggestion was made by the researchers about changing the design of future sessions to be more dialogic in nature, however given the varying confidence levels and high SEN numbers this was unlikely to have been successful in these classes. However, it may be useful in other settings. The suggested outline of the session would be: first, show images of industry and asked the whole group, where do emissions come from in this industry, to overcome this issue. Then, mention how most emissions come from indirect activities from consumers/the public/fans, people the industry serves without talking about scope 3. Then ask how we encourage people to change their behaviours. Perhaps, have you ever changed a behaviour? What influenced your decisions? What kept you motivated to keep with that behaviour? Would also include examples of the personal, industrial and political changes needed for solutions to be accessible, cheap and desirable. The session could have ended with, what potential jobs are you interested in? How might these be greened? What type of roles would you need to make these industries greener?

8.4.2 Aspirations

The evaluation revealed that aspirations declined following the session. This is likely due to the low engagement rates, the misunderstanding about the content of the session and the possible lack of clarity these pupils had on their future career (as gathered from not signing up to work experience). As many pupils were messing around and did not want to be there, we are not sure how reliable these findings are. However, it is understandable that such a short session, that does not provide them same sense of autonomy as the first or last engagement, is unlikely to make much of a difference.

Table 12 Green jobs & entrepreneurship aspirations

	Pre	Post	Post only
How likely are you to pursue a green job when you are older?	2.9	2.8	2.7

Would you be likely to pursue a green job if it related to what you care or are passionate about?	3.6	3.3	2.7
If you couldn't find a green job that related to what you care or are passionate about would you consider creating one?	2.9	2.6	3

They did however name a variety of skills that a green job may require, which appear far greater in number than what they listed at the start of the session.

Table 13 Knowledge improvement – green skills

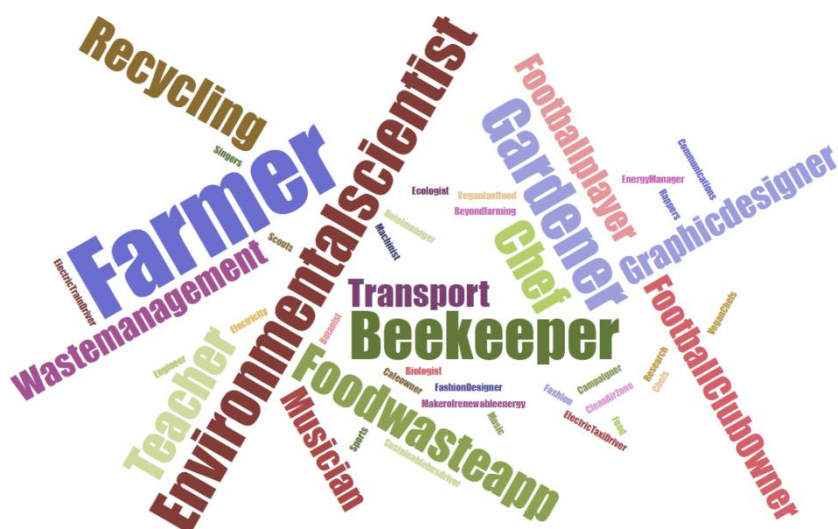| Name all the additional skills you think a green job may require:	Resilience, creativity, communication x2, being aware of your environment, listening, adaptability, problem solving, creative thinking

Figure 4 Word cloud of green jobs named (at start and at end of session, combined)

They also listed a lot more green jobs as the session went on, expanding upon more common examples given at the start of the session (e.g., beekeeper and farmer).

Table 14 Tabular form of green jobs listed, grouped into sectors.

Sports	Football-player x2 Football-Club-Owner x2	Sports
Food	Farmer x11 Vegan-fast-food Food	Bee-keeper x4 Chef x4 Vegan Chefs

	Cafe-owner	Food-waste-app x3
Music	Rappers	Music
	Singers	Musician x2
Communications	Graphic Designer x3	Communications
	IT	Campaigner
Transport	Electric-Taxi-Driver	Electric-Train-Driver
	Clean-Air-Zone	Transport x2
	Sustainable-bus-driver	
Energy and waste	Recycling x3	Waste-Management x2
	Electricity	Maker-of-renewable-energy
	Teacher x3	Energy-Manager
Research	Environmental Scientist x 5	Botanist
	Research	Ecologist
	Biologist	
Fashion	Fashion-Designer	Fashion
Other	Scouts	Beyond-farming
	Machinist	Gardener x4
	Hotel-manager	Engineer

8.4.3 Competencies

Although engagement was variable, some in-depth topical conversations were had among groups, suggesting critical thinking and creativity was exercised. These included:

- The sustainability of Taylor Swift's tour and Coachella and how to improve them (e.g., online concerts).
- The sustainability of the arts sector and how materials are not sustainable (e.g., acrylic paints, plastic brushes). The pupil who brought up the point thought changes would be expensive for them – this led to discussion on the need for personal, industrial, and political actions (to make sustainable supplies cheaper, more available and more desirable).
- Discussion on how some footballers are using their status to amplify campaign messages, e.g., Marcus Rashford and free school meals.

The design of the lesson also meant they could frame problems and vision solutions although researchers reflected that this proved quite hard for many pupils and a lot of guidance was needed.

8.5 College careers lesson

After reflecting on their experiences in the previous schools, the researchers decided to try another approach in the final engagement (activity 3, Table 7), this time drawing from humanistic/people-centred pedagogies and critical sustainability scholarship to develop a lesson that exposed young people to the concept of "regeneration", drawing upon entrepreneurship examples that are working towards this future, looking at future-survival challenges systemically. Following a short film inspirational film on "what is regeneration," pupils were introduced to the Japanese philosophy of Ikigai and asked to fill out their own. They then shared their Ikigai's with neighbours, before sharing select ideas to the whole group and writing their actions for stepping closer to their Ikigai. Finally, they shared what they enjoyed and what they found challenging about the task.

Figure 5 The front and back of the Ikigai worksheet

8.5.1 Assessment of activities

The researchers thought the approach they took worked very well, finding that the session kept pupils engaged and to task. Even though students had never used Ikigai before all found it easy to get started (without much preamble) and most finished every section, with sufficient time to write their actions. Different pupils struggled with different parts of the Ikiagi, or making

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connections between its different aspects. For instance, they may have been clear on their passions but less clear on what jobs are out there. Some (mainly articulated by female pupils) struggled to think about what they are good at, but appreciated the prompts that asked them to think what others may say about them. Others found it a challenge to combine things that feel disconnected, e.g., physics and music; sleeping and gaming, with what the world needs. There were also some who did not know what they wanted to be yet. For all of these reflections, the researchers responded with words of wisdom about using this as a tool which will help them to refine their ideas over time, that it is okay not to know these things now/okay to change as we become more familiar with our higher purpose, using the analogy of careers sometimes being like being a bowl of spaghetti rather than a straight line, and the need to keep looking out for solutions and positive news stories, sharing links at the end to further inspire the pupils.

Many students (mainly females) commented they were not used to reflecting on themselves but were appreciative of having the time to do so and that it made them feel good. They also liked having the opportunity to think critically and appreciated to hear positive stories of sustainability for once, as typically they only hear about the problems. Further, they valued seeing how each section of the Ikigai intersected to form a connection and why it is necessary to include all aspects for a more meaningful life (i.e., you cannot just satisfy one area). In a very practical way, students also saw value in the Ikigai prompt questions for helping with their CV/job interviews. Together, it was then discussed how companies are often interested in more than just a person's profession today – they want to understand their passions. Meanwhile, young people too are demanding more from their future employers (TotalJobs, 2024). Overall, there was a sense that all pupils left leaving more upbeat and hopeful about their futures.

Teacher also found both the model and video useful, with all seeing either overlaps with what they teach (i.e., geography) or benefit in using them for their work (i.e., careers). However, at least in terms of geography, they mentioned school bureaucracy limits field trips that could provide a source of inspiration for green jobs and green futures like the ones shown in the session.

8.5.2 Aspirations

8.5.2.1 Existing aspirations

Pupils that were clear on their future careers, shared plans for working at the UN, being a "professional positive person" (e.g., TED/motivational speaker), being an arts therapist, owning an arts shop to 'green' arts supplies, working to green the events industry (e.g., contributing to their sustainability strategies), and connecting their interests in business with sustainability. A

few others knew their passions but did not know how to make them their career. Advice was given to support them to make the connection. For instance,

- One pupil was fascinated by mycelium and mushrooms and enjoyed foraging but did not know how to make money from this. The suggestion was that they offer foraging courses that cook food from what is collected, like another forager does in Bristol.
- One pupil said they wanted a job that connected their love of crafts but did not know how to make it more sustainable. Discussion was had on what already does exist, such as mushroom leather and natural dyes. And they were advised to keep looking for similar examples.
- Yet another listed a lot of things they liked relating to communications (gaming, social media, talking) but did not see that they all link. This helped them to see how they could use these platforms to communicate environmental messages.
- Finally, another wanted to get into journalism and together it was discussed how they could report on positive stories of the future.

8.5.2.2   Raising aspirations

Compared to the start of the class, most pupils were moderately more likely to pursue a green job when they are older and would consider setting up their own if they could not find one that aligned to their interests/passions. These scores on future aspirations perhaps represent the most significant change of all groups engaged.

Table 15 Green jobs & entrepreneurship aspirations

Question	Average score
Compared to the start of the session, how likely are you to pursue a green job when you are older?	**4/5**, moderately more likely
Compared to the start of the class, if you couldn't find a green job that related to what you care or are passionate about would you consider creating one?	3.7/5, moderately more likely

The students explained that they were more likely to pursue a green job following this session because they realised such jobs can relate to what they care about and like, such as active listening and community building, and aren't limited to just certain sectors (e.g., renewable energy). Through exposure to examples from around the world, they felt the lesson showed

them how to make regenerative cultures a reality, providing them with sources of inspiration and opportunities to think critically about how considerations for the future may impact the environment and how that could be changed for the better.

> "I learnt that sustainable/green jobs rely on community and listening to others" (student3)

> "The video and examples given to me of new, sustainable jobs has shown me that sustainability and environmental health is an open and growing field which is in need of people." (student7)

> "I've been shown more on how this is a possibility." (student14)

> "It has allowed me to consider more sustainable pathways, and to think about how my considerations for the future may impact the environment (positively and negatively) and how I could change that" (student23)

8.5.3 Competencies

As is clear from the evaluation of this lesson, students were able to exercise critical thinking and self-reflection skills, with 'connectedness' awareness (Shtaltovna et al., 2024) being promoted through the film and interrelated nature of the dimensions of the Ikigai, and long-term thinking inherent in the task. Pupils further mentioned the need to include empathy, creativity and active listening as key competencies for being able to pursue a green career.

8.5.4 Defining 'green jobs'

In the open response to "Is the definition of green jobs sufficient?" students largely agreed that it was but thought that it overlooked crucial elements such as community, understanding and global-local wellbeing. A student during class also made the case that art, empathy and more active listening too should be part of a more sustainable, beautiful world.

> "Yes but it could include the idea of people working together in an understanding, loving and welcoming community to ensure this happens." (student5)

> "The definition covers multiple angles of the sustainability argument. But could be improved by integrating the community more" (student12)

> "I believe it is, as the spiritual and connection aspects are less quantifiable, and "good quality and decent" could be said to include them" (student25)

> "I think this definition is sufficient to cover the need for regeneration, healing and connection aside from an addition of being for the local, national and global community's wellbeing, not just the planet's wellbeing." (student26)

As the concept is broad, the students said that the inclusion of more examples would have been welcomed. One pupil also cautioned that it is important to include reference to the gravity of climate change to ensure people are aware why it is so important for more people to act through green jobs. This sense of urgency was underplayed in the session and points to similar findings in Laggan and Fogg-Rogers (in preparation).

8.5.5 Connections

The final engagement led to possible connections between the researchers and several staff members (the students union sustainability coordinator, geography teachers, the Sustainability Manager and a social entrepreneur) who were all keen to work together for mutual benefit. Connections were also made in the secondary school, during the school lessons, with the session being put forward for a Regional Youth Conference on sustainability. Due to personal and work-related reasons it was not possible for the team to present at the conference. The interest expressed by staff suggests that they saw value in this work.

9 Limitations

The lessons learnt from this project must be considered within the wider context in which it operated. Educational settings involved in this project were already engaging with the researchers – they had established trust and 'proof of concept' through previous engagements. While settings represented diverse demographics, it is not clear if participants reflected this diversity entirely. As mentioned, Arab ethnicities were underrepresented.

While it was reported that the more in-depth engagements were most successful in raising aspirations, this may well be because they were being delivered to students that already valued sustainability. Pupils chose to be at these sessions, putting their names forward based on a short blurb. In the other cases, pupils 'had' to be there.

This study was also conducted in the Global North, in a small area within England. Further evidence of the benefits and limitations of these approaches would be needed from other contexts to see if approaches work in other settings.

10 Discussion and conclusion

While the initial intention of this project was to support young people to develop social action projects linked to sustainability, drawing upon entrepreneurial design thinking tools to guide them, given the varying requirements and often strict scheduling of educational settings a variety of engagement tools had to be offered. Through the original in-depth engagements, SD/EE competencies were to be assessed to detect any change to students understanding and aspirations. However, a pragmatic approach was needed to capture what was appropriate given the length and type of engagement.

Despite this, some key lessons have been learnt from this project:

- Young people have variable understandings of what defines a 'green job', but very few appear to have learnt about the concept previously
- Many do not see obvious connections between their immediate interests or deeper passions and a 'green job' - which the evidence suggest are important for raising and sustaining motivation and aspirations.
- Short engagements, or engagements centred on more traditional 'learning to know' forms of education do not allow for sufficient space or time to explore the nuance of what a green job means to young people and how it can connect with what they care about
- Supporting young people through social action projects (*learning to do* and *learning to live together*, Delors, 1998) and self-reflection (*learning to be*) appears to be more effective in exploring green jobs and raising aspirations among young people. Such projects do this through cognitive development (i.e., self-efficacy), social learning and competency development. This points to the benefit of taking humanistic, human-centered (Rogers, 1995; Max-Neef, 2017) and ecological, relational (Huttunen and Heikkinen, 2024; Macy and Brown, 2014) approaches to learning.
- Combining learning objectives from diverse competency frameworks may be required to ensure holistic and practical learning occurs

11 Recommendations

Based on this research, the authors recommend further educational action research is carried out that links green jobs to humanistic, person-centred theories that build eco-civic

competencies and social learning theories that explore both cognitive and contextual dimensions of change.

In the school system, this requires changes to school assessments, that remain heavily focused on quantitative measures of success, to curricula, to align careers and entrepreneurship education with sustainability, teacher and leadership training to support them deliver and assess such activities, and education policies that favour such approaches,

Youth organisations can take heed of this learning also to further refine their approaches to engagement so that young people feel more self-efficacious and prepared for a more complex, uncertain, and volatile world. With competency assessments perhaps supporting them to obtain funding. Dedicated training and coaching of youth, making use of communication (Laggan et al., 2022) and entrepreneurial tools, together with annual monitoring of learning outcomes and competencies could support such organisations to secure funding linked to the green jobs agenda. Furthermore, signposting towards hopeful and impactful eco-social enterprises and inspiring films such as the ones included in this project may enhance hopeful outlooks and vis-a-vis aspirations, knowing that large-scale sustainable solutions are possible and happening here and now.

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