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Article

# Understanding the Gap between University Ambitions to Teach and Deliver Climate Change Education

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**Abstract:** This paper aims to determine why there is a gap between university ambitions to teach climate change education, even where formal commitments and institutional incentives exist to encourage action. To explore this, acknowledgement of prior conceptual work is considered. A new matrix emerges, which conceptualizes the influences of organizational values, organisational culture, personal values and positionality-identity on the integration of climate change education into the curriculum. The role and influence of the researcher is addressed using an auto-ethnographic approach. A thematic analysis is applied to data collected from program leaders for an undergraduate curriculum review at a medium-sized university Business School, in north-west England. Five clusters are used to structure the results and explore the narrative, before applying these to the new matrix for illustrative purposes. The discussion suggests a lack of knowledge by staff or confusion over the communicated organizational values; an organizational culture that perceives sustainability and climate change are not priorities for the institution; and an attitude-behavior gap that can be attributed to personal values. In conclusion, organizational culture can be changed to increase the priority of sustainability and climate change through an objective in staff annual Personal Development Reviews, for example. Recommendations are made for further research.

**Keywords:** climate change education; higher education; Carbon Literacy; conceptualization; Decade of Action

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## 1. Introduction

During the Decade of Action, the United Nations (UN) demands mobilization of governments, business, and civil society to deliver the 2030 Agenda and Sustainable Development Goals (SDGs) [1]. It considers that change is not advancing at the rate required and therefore necessitates an acceleration of sustainable solutions to address challenges such as climate change [1]. Climate change affects and is affected by all other SDGs. By example, the impacts of climate change and extreme weather events can impact infrastructure, life on land and below water; this can reduce access to decent work, clean water, food, energy, and education; which can result in climate refugees because of poverty, hunger, inequalities and impacts on health and wellbeing.

SDG target 13.3 aims to “improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning” and indicator 13.3.1 determines the “Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment” [2]. The role of Climate Change Education (CCE) is therefore critical in responsible management education not only to achieve this target and indicator, but also in endeavoring to drive down carbon emissions. However, given the tendency for talk rather than action on Education for Sustainable Development (ESD) [3], the development of an environment in which CCE can thrive is a necessity [4].

The need to align with the aims of the UN Decade of Action by accelerating sustainable solutions [1]; to produce more responsible business graduates [5,6]; to appreciate the shift from the accountability of Corporate Social Responsibility (CSR) to the measurability of Environmental Social Governance (ESG); and to complete a green transformation of the workforce [7], requires collective and individual action to achieve the 2030 Agenda [1]. The intent of this paper is to determine why there is a gap between university ambitions to teach CCE and delivery of it [8]; particularly when the absence of CCE is not wholly explained by a lack of institutional incentives or formal commitments to sustainability [9]. This paper acknowledges the CCE conceptual work of Molthan-Hill, Worsfold, Nagy, Filho, & Mifsud [6] and further extends it by recognizing that the climate change education framework for programs and practices is not only affected by organizational values and culture, but also the personal values and positionality-identity of the academic staff developing and delivering CCE. The paper is organized as follows. A systematic review identifies themes within the literature of initiatives and drivers, education and professional development and challenges for academics. This is followed by the conceptualization, materials and methods, results, discussion and conclusions with recommendations for future research.

### *1.1. Initiatives and Drivers*

The UN has identified the importance of collective and individual action at the global and local level [1]. Race to Zero, Principles of Responsible Management Education (PRME), Mindfulness-based Climate Action (MCA) and the Carbon Literacy Project are some of the global and local action initiatives focusing on carbon emissions reductions. Race to Zero represents 1103 educational institutions, 7126 companies, 541 financial institutions, 3000 hospitals and 1103 cities in mobilizing a global coalition of net zero initiatives that aim to halve global emissions by 2030 [10]. The PRME Working Group on Climate Change and Environment aims to support the 850+ global business school signatories and all other organizations wishing to embed CCE into their teaching, by acting as a resource of information and guidance. Bridging the collective and global with individual and local, community action using MCA has encouraged pro-environmental behavior and culture shift [11], while 37,994 UK citizens and 3500 organizations have been certified as Carbon Literate [12]. Carbon Literacy provides an awareness of the carbon dioxide costs and impacts of everyday activities, which motivates individual and community emissions reductions [12].

Despite an apparent growing interest within and between universities on climate action, an international study found it was absent from the curricula of 44% of higher education institutions, with 70% having no policy or plan for building academic capacity [8]. Therefore, the gap between university ambitions to teach CCE and delivery of that [8] appears to be reflecting the gap between climate ambition and policy delivery in the governance, legislative and political fields [13]. Although limited research, particularly in developing countries, has been undertaken to understand the university role in affecting student awareness and student behavior towards climate change [14], it is clear that students will need to be more knowledgeable about climate change, as they will have related responsibilities within their future careers [5,6]. The newly established International Sustainability Standards Board (ISSB) will deliver a global baseline of disclosure standards for reporting climate-related risks and metrics [15], accelerating a movement from the 'accountability' of CSR to the 'measurability' of ESG.

### *1.2. Education and Educator Training*

Varying pedagogical tools can support or facilitate learning and an individual carbon footprint estimator encouraged student engagement in a university initiative to achieve carbon neutrality, as it was seen as transparent and accurate [16]. Further, although the supplementary guidance for an App caused cognitive overload, climate change

knowledge was increased when using the App without the guidance [17]. However, depending on audience and context a shift towards focusing on solutions rather than facts alone can be preferred [18] and a new university course aimed at agriculture professionals was praised for focusing on current challenges and relevant-skills acquisition [19]. In addition to formal learning opportunities, climate change awareness can be improved during informal activities such as student societies [14,20]. Climate change skepticism can be addressed via initiatives that engage learners (students/teachers) via extra-mural activities and research [5].

The training of novice and experienced teachers aims to expand knowledge, confidence and credibility with each new skill set acquired. By increasing and diversifying teaching while strengthening multidisciplinary, climate-friendly lifestyles can be achieved and cascaded to others [21]. Development of preservice teachers used a flipped class intervention, achieving increased awareness of climate change and a greater willingness to engage in CCE [22]. Trainee biology teachers used a new questioning tool and those with a greater connection to nature were able to identify more causes of global biodiversity loss [23]. Experienced educators reported practice change and a sense of validation when accessing climate change research and interest in biomass energy by agricultural teachers was motivated by pedagogy and learning [24].

### *1.3. Challenges for Academics*

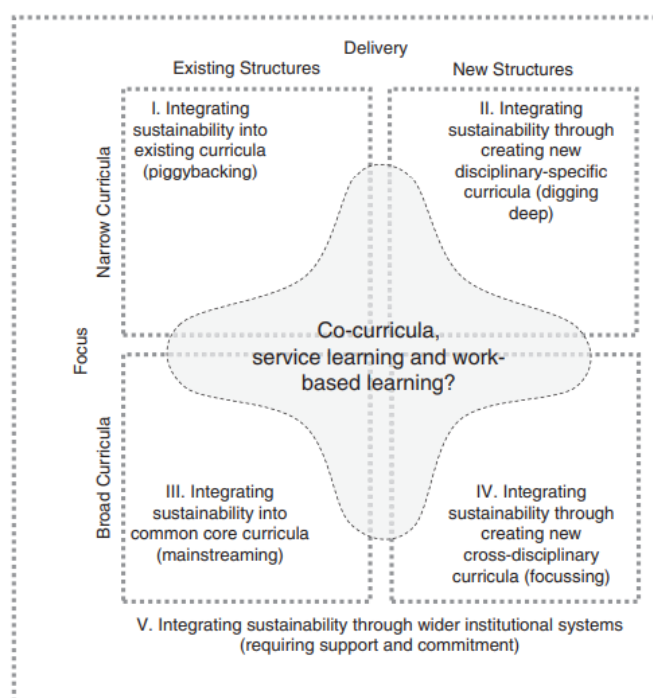
The absence of CCE in higher education is not wholly explained by the lack of institutional incentives or formal commitments to sustainability [9]. Before reaching an understanding of collective efficacy that can drive willingness to take climate action [25], academics need to feel a sense of trust, control and belongingness [26]. This may well be a challenge if the future of higher education leads to disciplinary boundaries disappearing, requiring educators to embrace inter-, trans- and cross-disciplinary teaching [27]. Further, although the mobility habits of universities must change to comply with government carbon neutrality targets and to manage reputation [28], few academics willingly reduce their air travel [9]. Such unwillingness is caused by perceptions that professional academic success will be impacted, despite research suggesting otherwise [29]. For those travelling academics that also express concern about climate change [29], they will likely seek ways to reduce cognitive dissonance through effective teaching and bringing 'glocal' context to the grand challenges [30]. However, subject level expertise and curriculum constraints can make good global citizens feel a lack of knowledge or constrained in delivering climate change content.

Content delivery decisions such as addressing climate change contexts and perspectives beyond the local and global impacts are also affected by personal values, norms, and positionality. The relationship between personal values, norms and climate action are established in many studies [31-33]. Further, delivery decisions are affected by positionality which "refers to the race, class, and gendered identities that people occupy in society" [34]. As we have multiple identities that are complex, fluid and relational [35], these present additional challenges. Does an academics positionality impact the use or delivery of content on the lived experience of resource access inequalities, climate solutions impacts and environmental racism [36-38]? Do universities need greater investment in partnerships to appreciate the relationship between climate change, indigeneity and inter-connectedness [30]? Does subject expertise affect views on the contested notion of climate justice, which assumes historic responsibility for anthropological climate change lies with the wealthy and powerful of the global-north [38]? With decolonizing the curriculum on the UK universities agenda, would past injustices be addressed by decolonizing climate change through decarbonizing energy, or would it deepen social, racial, and historical inequalities [36-38]?

## 2. Conceptualization

This conceptualization aims to build on existing integration models for sustainability and climate change education. A range of key models were reviewed, but it was clear that personal values, norms, and positionality were either not addressed or not fully addressed within these models. Personal values, norms, and positionality are as important as the institutional policies or structures in the integration of climate change education into the curriculum. Personal values express motivational concerns [39] and where personal values are widely held, they can be identified as social values [40–42]. Personal norms are behavioral self-expectations experienced as feelings of moral obligation [43] and social norms reflect the attitudes, behaviors and beliefs of the group [44]. Positionality is subjective, relational, and power-imbued, and as a result individual values and biases cannot be denied [45]. Consequently, recognition of these influences on individual academics is needed, as this could affect the depth and breadth of climate change integration into the curriculum.

In their exploration of sustainability integration into the accounting and finance curriculum, Mburayi and Wall (2018) draw together several important matrices: Rusinko (2010) the ‘Matrix to Integrate Sustainability in Management and Business Education (Curricular & Co-Curricular Learning)’ [46]; Painter-Morland et al. (2016) the ‘Matrix to illustrate integration of sustainability’ [47] which is an adaptation of Godemann, Herzig, & Moon (2011); Painter-Morland et al. (2016) the matrix ‘Systemic institutional integration of ESGE issues into business schools’ [47]; and Wall et al. (2017) the ‘Matrix showing broad options of integrating sustainability into curricula, and the potential locations of work-based learning’ [48]. The resulting Mburayi and Wall (2018) matrix ‘Approaches to integrating sustainability into business school curriculum’ (Figure 1) extends the shared space with the addition of work-based learning [49], but retains the Painter-Morland et al. (2016) five dimensions [47].



**Figure 1.** Approaches to integrating sustainability into business school curriculum. Source: Mburayi and Wall (2018 p. 295) [49].

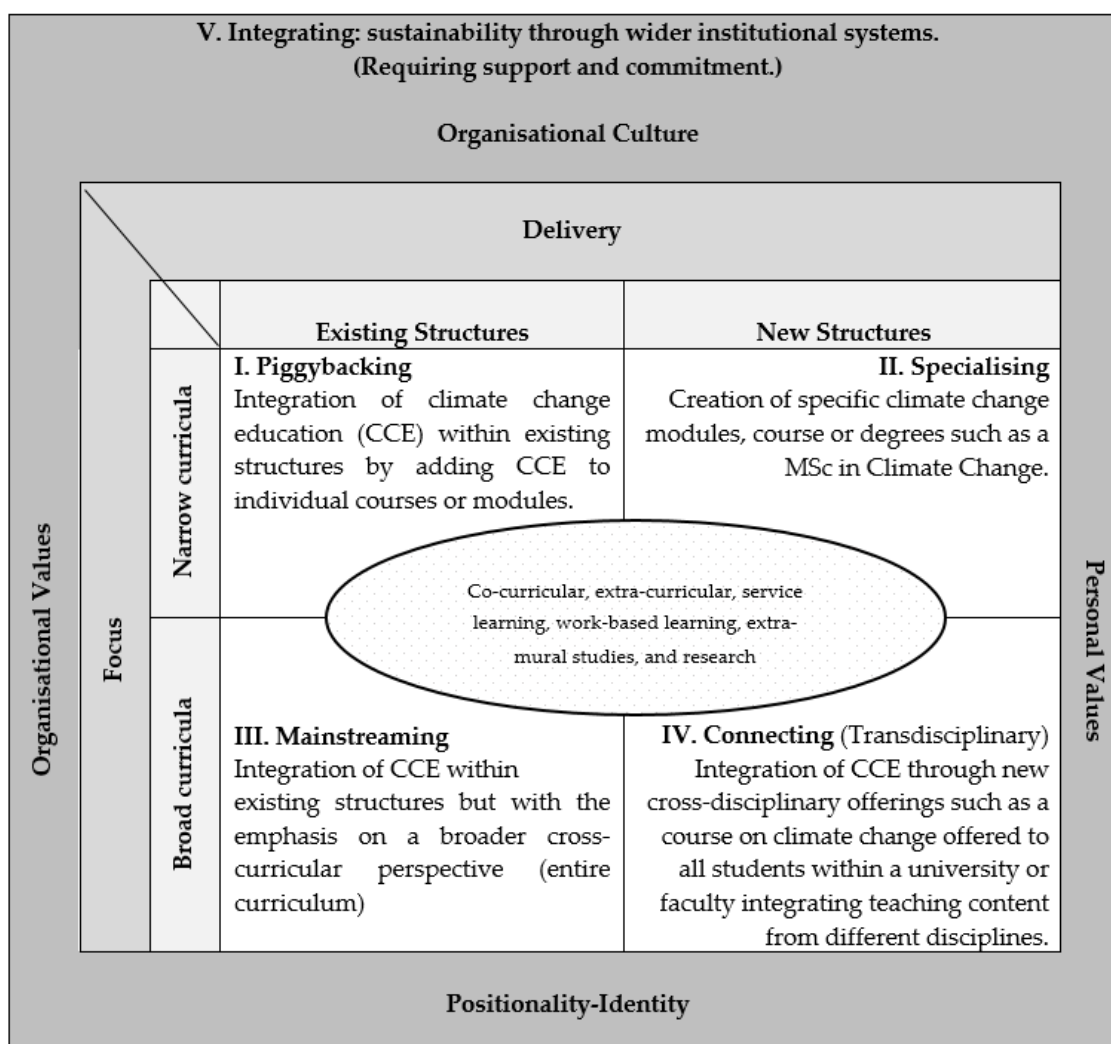
Despite the need for urgent action on climate change the challenge of teaching the complexities of CCE can lead to institutional or academic focus on less complex areas of ESD [6]. Molthan-Hill et al. (2019) also adapt and modify the Rusinko (2010) and

Godemann et al. (2011) matrices in their development of a framework aimed at determining how universities embed CCE in the curriculum. The 'Matrix to illustrate the integration of climate change education' retains the two dimensions of 'Piggybacking' and 'Mainstreaming'; changes the dimensions of 'Digging Deep' and 'Focusing' to 'Specialising' (a more narrow environmental/sustainable development curriculum to meet employer needs) and 'Connecting (Transdisciplinary)' (innovative, transformative and newly designed offers); drops the fifth dimension of the institutional systems and the shared space in the center [6]. This CCE matrix was tested across 45 countries with 212 participants and established there were no clear patterns relating to approaches at the international, intranational or institutional level. Nonetheless, it was noted that independence and autonomy are important influencers when identifying suitable CCE approaches in Higher Education Institutions (HEIs) [6].

Inter-institutional and intra-institutional challenges or tensions for HEIs are evident from the testing of the CCE integration matrix, which suggests that the fifth dimension identified by Painter-Morland et al. (2016) would be a beneficial addition to the CCE integration matrix. The fifth dimension suggests the need for a systems thinking approach, systemic leadership, connectedness to business and capacity building to achieve success [47]. Painter-Morland et al. (2016) identify the need for further investigation of situational-individual interactions, as staff are likely to be influenced by the institution approach with regard to teaching, research and HR policies. As Painter-Morland et al. [47] suggest "faculty members do not have an incentive to integrate ESGE issues into their work (besides maybe a moral conviction that they want to do it) as it does not support their career" and this surely remains the case with CCE. There are two considerations here (a) the faculty members are human resources and part of the institutional system; the resources must be used for and measured against allocated tasks, (b) humans are complex beings and bring their own knowledge, values and experiences to the institution; notwithstanding academic freedoms including independence of the mind, originality, spontaneity, personal autonomy, truth and critical thinking [50].

The conceptualization in this paper therefore builds on the CCE integration matrix [6]; the approach to sustainability integration matrix [49]; and the matrix 'Systemic institutional integration of ESGE issues into business schools' [47]. This new matrix 'Organisation and individual influence on integrating CCE into the curricula' (Figure 2) recognizes the challenges of integrating CCE into curricula due to the complex nature of the institution and of the individual employees within the organization. It further recognizes the likelihood of a climate change attitude-behavior gap that applies as much to the institution as it does to the individual employees. The attitude-behavior gap has been well documented in ethical consumption, pro-environmental and climate concern research [51-54]. As Painter-Morland et al. [47] identified, the perception as to the level of sustainability integration was substantially different between dean's and faculty staff. Therefore, are the espoused organizational values on sustainability and climate change reflected in everything the institution does? Are individual employees passionate about or cool towards sustainability and climate change?

To explain, the matrix 'Organisation and individual influence on integrating CCE into the curricula' (Figure 2) retains the four dimensions of the CCE integration matrix [6] and builds on the shared space [46,49] with the addition of extra-curricular [55], extra-mural studies [56] and research [47]. Importantly, it further extends the fifth dimension to include organizational values [57], organizational culture [58], personal values [31-33], and positionality-identity [34,35]. The matrix therefore indicates that the structures for delivery and focus of curricula are embedded within the wider institutional systems which are influenced by: (a) the set of organizational values and guiding principles, (b) the organizational culture of shared values, beliefs, and assumptions that serve to influence staff attitudes and behavior, (c) the importance of personal values that affect characteristics and behaviour that motivates and guides individual decisions, (d) the positionality-identity of individuals which are multiple, complex, fluid and relational.



**Figure 2.** Matrix—Organisation and individual influence on integrating CCE into the curricula. Hindley (2022): adapted from Molthan-Hill et al. [6], Mburayi & Wall [49], Rusinko [46].

### 3. Materials and Methods

To explain and illustrate the conceptualization at Figure 2, data collected from the Business School—Education for Sustainable Development curriculum review was used. The interview questions focused broadly on sustainability issues rather than narrowly on climate change. The rationale for this was threefold. Firstly, business school academics might perceive they lack sufficient climate change knowledge, potentially resulting in a reluctance to participate in the study. Secondly, the issues of climate change and sustainability are often conflated by non-experts, therefore suggesting the broader questions would likely return responses related to climate change. Thirdly, the interconnected, interdependent and complex systems of the world require a systems thinking approach (see such as [59]) and from this perspective, SDG13 Climate Action has an impact on all other SDGs, which has relevance to business. By limited example, the physical impact of climate change and extreme weather events can affect business infrastructure, raw materials access, supply chain breakdown, employee migration, destroyed assets, increased costs of insurance and risk management.

The Business School curriculum review replicated a 2016 pan-university study by Lerczak and Hunt [60] in a medium-sized university in North-West, England. The Lerczak and Hunt study aimed to determine the extent of sustainability within the formal curriculum, while also exploring staff perceptions, understandings of, and attitudes towards,

sustainability and its integration into university curricula. The research employed a multi-method approach of qualitative research methods to gather data. The first phase used content analysis to review undergraduate program specifications and associated module descriptors to produce a documented curriculum review. The second phase used semi-structured interviews with program leads. This paper focuses on use of the data collected within the second phase and its application to the conceptualized matrix.

The Education for Sustainable Development curriculum review, in the Business School, aimed to reveal correlations or dissonance between the documented and enacted curriculum. Semi-structured interviews were used with a purposive sample [61] of nine undergraduate program leaders that represented the population of eleven undergraduate program leaders and related undergraduate courses [62]. The questions used replicated those in the previous Lerczak and Hunt study, with an additional three questions added based on points arising from that study (see Table 1).

**Table 1.** Semi-structured interview questions.

Original questions from Lerczak and Hunt's 2016 study	
1.	What is the first thing that comes to mind when you hear the word or term sustainability?
2.	What have been the main influences on your perception of sustainability?
3.	How important do you think sustainability is as a topic in the 21st century?
4.	How do you feel about the place of sustainability at university level and its integration into the curriculum?
5.	Do you think universities can have a significant impact on students by engaging with sustainability on an operational level?
6.	It is now widely accepted that moving towards the goal of a sustainable future requires fundamental changes in human attitudes and behaviour. Therefore, progress in this direction is critically dependent on education and public awareness. Would you agree with that statement?
7.	Do you consider sustainability to be related to your programme/module?
8.	How do you feel about its integration within your own teaching and learning activities?
9.	Do you think any of your students already see the potential connections between sustainability and the programme's content?
10.	Do you think sustainability can, and should, be integrated into all programmes and discipline, although the extent of its integration will vary considerably?
11.	Do you feel that sustainability is something you are, or should be, obligated to incorporate within your teaching and learning activities?
12.	What do you think are the main barriers to integrating sustainability in university curricula?
Additional questions arising from Lerczak and Hunt's 2016 study	
13.	Have you ever used sustainability resources or case studies from: <ul style="list-style-type: none"> <li>(a) The Carbon Trust      (b) World Economic Forum</li> <li>(c) Sustainable Development Knowledge Platform</li> <li>(d) The World Bank      (e) Price Waterhouse Cooper</li> <li>(e) UN World Tourism Organisation</li> <li>(f) OECD      (g) Other _____</li> </ul>
14.	Do you think that a bank of subject-relevant sustainability resources would be useful to you and your programme? If yes, why? If no, why not?
15.	A recommendation from the 2016 Sustainability Unit Study was that students should develop a tool to review their own programs, for sustainability-related content and themes. Would a tool which program and modules leaders could use to review their own programs and modules be of interest to you? If yes, why? If no, why not?

A thematic analysis was applied to the transcribed interviews and allowed the data to drive the themes, with the focus of meaning at the semantic level, capturing understandings and perspectives [63]. The thematic analysis produced five clusters and themes (Table 2) which reflect the 15 questions.



**Table 2.** Summary of Thematic Analysis Themes.

Questions (Table 1)	Clusters	Themes
1, 2, 3 & 6	Cluster 1	Meaning, influencers, and importance of sustainability to participants
4 & 5	Cluster 2	Sustainability integration at the university
7, 8, 9 & 10	Cluster 3	Sustainability integration at the program level
11 & 12	Cluster 4	Challenges to sustainability integration
13, 14 & 15	Cluster 5	Resources and program reviews

### *Positionality-Identity*

Recognising and mitigating the influence of researcher positionality-identity on impression management and socially desirable responses from peers [64,65], the pre-pandemic semi-structured interviews were indirectly completed through the employment of four student researchers with a self-declared interest in sustainability and climate change. As part of a compulsory Work-Based Learning module with a 5-week placement, the student researchers attended a period of ‘employee researcher’ induction that covered subjects ranging from research ethics to interviewing skills. These were delivered by the researcher and designed to achieve good outcomes for the study, while also benefitting the students in their undergraduate studies and future careers.

Positionality-identity is important in the context of this study as it determines the researcher approach and impact on sustainability integration within the wider institution (Figure 2). Autoethnography is used to illustrate and explore positionality-identity. Drawing “upon the experience of the author/researcher for the purposes of extending sociological understanding” [66], autoethnographies are about identity [67] and “the intensely personal process of identity construction is best documented through an autoethnographic approach” [68].

I have multiple identities as an academic. I am an employee that works within the systems and structures of the university, and I am a Certified Management and Business Educator (CMBE). I provide pastoral care and I am a teacher, facilitator, nurturer, researcher, and advocate for sustainable development. I identify with groups such as Principles for Responsible Management Education (PRME); the PRME Working Group on Climate Change and the Environment; the Carbon Literacy Project; the Institute of Environmental Management and Assessment; and B-Corps. I feel it is my mission to encourage engagement with Carbon Literacy and to continue to cascade this through the institution and wider society. My academic interests also help inform my home-life and vice versa. I have significantly reduced purchasing plastic packaged products and meat/fish consumption, by replacing with B-Corps certified products that help reduce carbon emissions and waste to landfill.

My positionality [69] uses an interpretivism philosophy which is subjective, socially constructed and with complex multiple perspectives. Through this lens and based on personal experience I take a subjective view of the observed phenomena on sustainability integration, which is relative to the 2030 SDG agenda, the climate emergency and higher education culture. I am an insider, a member of the academic team in a business school. I am politically centrist and a female, baby-boomer from a white-British, middle-class, non-practicing Christian background, with a tourism-related career prior to entering academia. I am passionate about the Sustainable Development Goals and particularly SDG13 Climate Action. Therefore, I am invested in the context of this research from the perspective of being active in driving Carbon Literacy (Figure 3).

### Positionality–Identity

I have woven the Sustainable Development Goals (SDGs) throughout my modules and the SDG icons highlight related content on the virtual learning environment, e.g., SDG5 Gender Equality for a session on diversity. I consider the green skills and digital skills agendas are a priority and to close those industry skills gaps I designed a module with a net zero/carbon neutral and Smart Cities focus. I use real-world assessment, linking to employability.

The pandemic required innovation in module delivery in 2020, and I replaced field trips with Carbon Literacy training. This interactive content engaged students and improved their understanding of the relationship between the impact of climate change on tourism and vice versa. I then linked the Carbon Literacy content to Smart Cities, assessing students on improving the visitor experience by integrating low-carbon or emissions reductions features into a concept App.

I helped set-up a live broadcast for the Carbon Literacy Project/Universities action day during COP26 2021 and the Vice Chancellor addressed the audience, commenting on the innovative integration of Carbon Literacy into the module. This was further highlighted during the opening addresses at business school graduation ceremonies in 2022. This is important to me, as I can see my efforts on Carbon Literacy are making a difference, which benefits planet and people.

**Figure 3.** Invested Positionality–Identity Vignette.

A summary of the methods used in this study is provided at Table 3.

**Table 3.** Summary of methods.

Research study	Education for Sustainable Development curriculum review in the Business School. (Replicating a 2016 pan-university study by Lerczak and Hunt [60] in a medium sized university in England).
Research aim	(a) To determine the extent of sustainability within the formal curriculum of the Business School. (b) To explore staff perceptions, understandings of, and attitudes towards, sustainability and its integration into university curricula, within the Business School.
Method	Multi-method approach of qualitative research methods to gather data. Phase 1: content analysis to review undergraduate program specifications and associated module descriptors to produce a documented curriculum review. (Not used in this paper.) Phase 2: semi-structured interviews with program leads.
Sampling	Purposive sample of undergraduate program leaders in the Business School Population $n = 11$ Sample $n = 9$
Phase 2 Instrument	Semi-structured interviews using a set of 15 questions (Table 1)
Phase 2 Data analysis	Thematic analysis applied to the transcriptions resulted in five themes (Table 2)
Researcher and environment	Positionality-Identity

## 4. Results

This section uses the five thematic clusters to present the rich data collected from the Business School curriculum review. Throughout, the participants are identified by P and a participant number (P1, P2...). The Section 5 that follows will draw on these results to illustrate the organizational values, organizational culture, personal values and the researcher positionality-identity within the conceptualized matrix (Figure 1).

#### 4.1. Cluster 1: Meaning, Influencers, and Importance of Sustainability to Participants

Sustainability has varying meanings for participants in the study. There are strong connections between ethics, responsibility and business commitment to sustainability evident in the narrative of P6 "...if you have sustainable commitment in your business you need to be able to understand what those commitments are..." (P6) and of P8 "...sustaining raw materials and all that but also sustainability in terms of ethics and social responsibility within organization. Maintain business and ensure it's ethical over time..." (P8). P4, P7 and P8 draw on the need to manage the finite resources "...so they last for longer..." (P7). Although, P5 focuses on business longevity "...[I] don't always think that businesses should be sustained forever..." (P5), P9 draws clear links to the three pillars of sustainability:

"...to other people's minds maybe sustainability is green [but it] isn't just about the environmental sustainability, it's about economic sustainability...communities, stakeholders, sustainability from [the] socio-cultural perspective. Yeah so, many and varied." (P9).

The main influencers on perceptions of sustainability tend to come from wider communications, work-related policies or activities and other people. By example, the media and social media are influencers that have powers of persuasion (P4, P6, P8). Despite overwhelming consensus by scientists that climate change does exist [70], P6 perceives there is a need to debate 'two schools of thought on climate change (e.g., crisis exists vs. natural cycle)'. P6 further considers there is "...nothing wrong with [waste food...but] other countries can't find food to survive..." (P6). This demonstrates implicit knowledge around food security concerns that can be caused by climate change, but there is a lack of appreciation of the impacts on climate change from food waste, food miles and over-production, for example. In terms of other influencers on individuals and their perceptions on sustainability, these include work-related policies (P3); reading for purposes of research or teaching and learning (P3, P6, P8, P9); colleagues (P5, P9); religious faith (P5); and family (P5, P7):

"...it's probably something I have been interested in as I have been growing up. I have always been taught to be responsible about the way I use resources, materials and trying to reuse things and not throwing things out just for the sake of it, so...[growing]...up in that background of recycling and environmental issues..." (P7).

Many participants consider sustainability to be of vital or of "crucial" (P5) importance. They contextualize their thoughts around the university and society. In respect of teaching and learning, P3 believes sustainability "...should be embedded as opposed to a standalone topic..." (P3), while the importance of sustainability at the university is "...sort of reflected in the sense that you are doing this [interview] and that we've got a sustainability officer..." (P9). Societal concerns are raised around issues of traceability, child labor and the supply chain (P6), but also the impact on current and future generations (P4, P7) which requires society/business to act responsibly (P8).

Participants generally agreed with the statement 'It is now widely accepted that moving towards the goal of a sustainable future requires fundamental changes in human attitudes and behavior. Therefore, progress in this direction is critically dependent on education and public awareness' (see Q6 Table 1). Although not all respondents agreed that progress is 'critically dependent on education' (P8) they did reflect. P7 identified the importance of early education and role models in teaching social values, such as caring for people and planet (P7). P5 considered that more fundamental changes are required—a reframing of the debate and change in narrative; a shift from the world is flat to the world is round (P5). This is possibly in response to narratives from others suggesting there should be more calls for more public debate (P6), although to what end, other than a delaying tactic on action, is unclear. P3 identified the need for systems designed to fit people,

so change is made easier (P3), suggestive of a lack of willingness to change behavior. Ultimately, P9 considers "...politically it depends on the will of the country, for example, or how much funding goes into it..." (P9), which suggests a lack of agency.

#### 4.2. Cluster 2: Sustainability Integration at the University Level

Universities can have a significant impact on students by engaging with sustainability on an operational level. The 'award winning' sustainability unit was praised for their pro-activity and extra-curricular activities (P6), with the importance of 'real-life' and moving beyond lectures to 'bring it home' (P4), that creates a 'ripple effect' when students talk to others (P9). Some of the participants felt that sustainability is not talked about enough at the university (P5, P6), although others consider they "...talk about the issues without actually calling it sustainability..." (P9) or believe it "...has kind of been merged and subsumed into everyday life..." (P8). However, P7 recognized the need for the right message to be communicated "...if I was a climate change skeptic that would really filter down into my teaching..." (P7). Further, the right staff need to be developed and need to deliver sustainability in the curriculum:

"...I think in reality in higher education, in particular the curriculum and the content and the values are embedded very much comes from staff and their passion and their interest... it's very much down to the teachers to develop the curriculum..." (P7).

At the business school level, respondents P4 and P7 were clear that sustainability is a management challenge and there is a responsibility to produce aware graduates, which also requires aware staff. P5 is clear that staff need to practice what they preach, or they undermine themselves with the students. Further, "...if you can recycle then why wouldn't you...there's something cultural about that and however small it is, there is an influence there with students..." (P5). It was also noted that the integration of sustainability into the curriculum is not always in the control of the academic if they are following professional syllabi "...the topics I teach...are very driven by the professions...it's implicit...I don't sort of stand up and do a lecture on sustainability..." (P3).

#### 4.3. Cluster 3: Sustainability Integration at the Program Level

All respondents agreed that sustainability is related to their program, although their interpretations of sustainability in this context seemed to vary, which can create a challenge for embedding sustainability into programs. As with the earlier discussion on meanings, sustainability for some respondents means 'sustainable', in the sense of the capability of the business to continue operating year after year (P7, P9). Additionally, for P4, the suggestion is that business and sustainability are mutually exclusive concepts:

"...that kind of contradiction potentially between seeking profit, if you're looking at purely business versus y'know kind of socially responsible attitudes towards sustainability" (P4).

Nevertheless, sustainability is embedded across some programs (P7), with examples of standalone sustainability modules (P5, P7) and sustainability content within other modules (P3, P7). Teaching and learning content includes reference to sustainability coverage in accounts and directors reports of larger companies (P3); creating debates within a business module (P6); and running "...projects based around PEST factors...[and thinking]...about current issues around the environment. So, some of that is obviously business related, but you know there are issues around social responsibility..." (P8). However, it is evident that there is more to be done (P5, P9), although as P4 considers "I...haven't given it the thought that it deserves..." (P4).

Rational and emotional connections with sustainability are noted in the content of tourism programs (P7), possibly because the links with sustainability and ethics are made explicit. Interestingly, on some business programs it appears that students themselves make the links to sustainability—"...I'm not going to claim that this is something we are

instilling, I think that's something they are bringing in..." (P5), they talk about the sustainable commitments of Marks and Spencer, or Kellogg's (P6). However, this seems to be in contrast to other programs "...probably, if you asked them 'do we do sustainability' they'd probably say no, if I'm honest...that could be my fault...[for not providing explicit links] (P3). Some participants perceive students do not make connections between content and sustainability because "...if it's not in the assessment, who knows if it's actually sinking in..." (P4) and they see it as just 'a tick box' exercise (P8).

#### 4.4. Cluster 4: Challenges to Sustainability Integration

Despite participants having previously mentioned the importance of sustainability and the links with their programs, few of them agreed that sustainability should be in all programs. P7 was alone in not seeing any barriers to sustainability inclusion "...as we direct the curriculum for our students..." (P7). However, P6 believes that some colleagues do not get it, that it is not a topic and it is not a topic of importance (P6). Potentially, this is the result of traditional business school teaching that focuses on making money and money as a notion for success (P5). It could be that:

"...the problem with sustainability, it's a bit like environmentalism, if you try pushing it down people's throats it will be the end, it just becomes another fad..." (P9).

Other participants identify barriers including time pressures (P3, P5); the inflexibility of curricula (P3, P8); the need for support and guidance on sustainability (P5); the lack of relevance or fit with disciplines such as math (P9), English, nursing, psychology, and computer games programming (P4); student resistance (P8); and relevance to students (P4). P5 seems unconvinced by sustainability and suggests a need for creative debate on its inclusion in the curriculum because 'we don't really know all the answers' (P5). Although a potential factor of media influence (P8), this could also be a delaying or avoidance tactic. Of greater concern, and despite overwhelming scientific evidence to the contrary, is P4's perception that there is a lack of consensus on climate change which can 'turn-off' staff and students. Although, as P9 considers:

"...if someone can believe Donald Trump when he says global warming is a fictitious creation by the Chinese to improve trade barriers, then people will believe anything..." (P9).

Finally, in this cluster, when asked if sustainability integration should be obligatory (Q11, Table 1), it was evident this was an unpopular suggestion. P5 considers sustainability needs a higher profile, but it shouldn't be obligatory — "...just show you've considered the implications..." (P5). "...[W]ho does the obligation..." (P9); we already follow QAA benchmarks, so it would have to be government or a QUANGO (P4); the university needs to insist on a program outcome that can be measured (P3); and more action is needed from the students to demand it (P7). Ultimately, for staff and students, it is about "...attitudes and...buying into it..." (P8), as P7 considers:

"...sustainability is more about inspiring people to have an interest; I think if we tell people how to behave that's not always the best way to be. But if you can give them examples, best practice and set things up in a way that makes things [easier to digest, it is] more likely to happen, students get passionate about things in their own time. Giving them the ability to understand and then take responsibility is important..." (P7).

#### 4.5. Cluster 5: Resources and Program Reviews

Participants had used some sustainability resources or case studies from a list that included OECD (P3, P4, P6, P7, P8); World Economic Forum (P4, P6); Carbon Trust (P6); and the UN World Tourism Organisation (P7). The World Bank was used for teaching and

learning (P4, P6) and for research (P3, P8); Price Waterhouse Cooper was used for standards (P4, P8). The Sustainable Development Knowledge Platform was not used by any of the participants and two participants did not use any of the listed resources (P5, P9). The offer of a bank of sustainability resources that could be used by academics received lukewarm interest—quality assurance concerns (P4); time pressures requiring easy access case studies (P3, P8); not centrally imposed and needing advocates (P5). Further, there were mixed comments on involving students in reviewing their own programs—students should be involved (P4, P5), but they are already doing lots of surveys and are very busy, so engaging them would be a challenge (P3, P6, P7) and as students would not necessarily understand sustainability in the curriculum (P7), this review would need to be undertaken between staff and students (P8), and then it is just another tick-box exercise (P9).

## 5. Discussion

This discussion draws on the results and their application to the conceptualized matrix for illustrative purposes (Figure 1). The discussion is presented under the four headings Organizational values, Organizational culture, Personal values, Positionality-identity that form dimension V. of the matrix.

### 5.1. Organizational Values

The meaning of ‘sustainability’ to participants varied, which could indicate that sustainability and climate change are not espoused in the organizational values or are not well known. In this case, the university mission and vision do not specify the words ‘sustainability’ or ‘climate change’, although ‘sustainability’ is specified elsewhere in student centered materials. It suggests that the extent to which SDG target 13.3 awareness-raising has been achieved in the institution is open to improvement [2]. Any confusion over the communication of organizational values can impact the extent to which SDG indicator 13.3.1(ii) education for sustainable development is mainstreamed in curricula [2]. This can affect the level to which staff deem sustainability or climate change of importance to the institution, reflecting results from international studies and other sectors [8,13]. From the external perspective, a lack of sustainability or climate change phrasing in the mission and vision could be perceived as contrary to the spirit of the SDG target 13.3 and indicator 13.3.1 [2].

### 5.2. Organizational Culture

Although there is a culture of embedding sustainability and climate change into some business school programs and modules, which is in line with the UN Decade of Action aims to accelerate sustainability teaching and solutions [1], the cultural norm or shared beliefs suggest that sustainability and climate change are not a priority for academics. The context for these beliefs includes pressure on academic time, other internal priorities, or external drivers and an ‘award winning’ central sustainability unit that delivers extra-curricular activities for students to improve their climate change awareness [14,20]. However, some respondents identified sustainability as a management challenge that requires students to be equipped with future skills required by employers. Responsible business graduates with climate change knowledge are needed to meet the shift from accountability to measurability (CSR to ESG) and a green transformation of the workforce [5-7]. This would require a more embedded approach to climate change education, but the obligatory inclusion within programs or use of centrally designed or imposed resources was unacceptable to participants, as was the idea that students should undertake program reviews for sustainability. This is perhaps perceived as an attack on academic freedoms and the need to feel a sense of control [26]. However, maintaining a sense of separation between academic specialisms and climate change education will be challenging to the sense of belongingness and trust [26] if eroded by inter-, trans- and cross-disciplinary teaching [27].

### 5.3. Personal Values

Personal values assist in understanding why the absence of climate change education in higher education cannot be wholly attributed to the lack of institutional incentives or formal commitments to sustainability [9]. Attitudes on climate change education and sustainability can differ between respondents and depend on personal values (a theme explored by Hindley & Font in climate change impacted disappearing destinations) [32]. Personal values are expressed through notions around future generations and responsibility; the use of terms 'vital' and 'crucial'; and specific identification of factors such as finite resources. The transcript for Participant 7 was rich in examples demonstrating why values matter in combatting climate change [26,29,30]. However, socially desirable responses were noticed [64,65] and Participant 9 considered "[the importance of sustainability at the university is] sort of reflected in the sense that you are doing this [interview]". Attitude-behavior gaps were also identified [51-54] and Participant 5 suggested that sustainability "...should be embedded as opposed to a standalone topic...", although this was a challenge due to time pressures and curriculum restrictions such as professional syllabi.

### 5.4. Positionality-Identity

In addition to the Positionality-Identity of the researcher being revealed in the methods section, the transcripts also reveal multiple identities of the participants. The community of academics is complex, fluid and relational [35]. Academics undertake roles as researchers, lecturers, content, and curriculum designers, but as employees they are influenced by institutional initiatives and drivers. Academics are identified as subject experts within a field of knowledge which affects perceptions as to the relevance of sustainability and climate change education in the curriculum. Some academics are seen as sustainability and climate change role models for colleagues and students. However, it is also their faith and identities as family members (parent, child, sibling) that serve to influence opinions and actions on sustainability and climate change education.

## 6. Conclusions

Transforming educational programs for action on climate change and aligning them with the UN's Decade of Action is a challenge. Firstly, despite stated organizational values, institutional initiatives and external drivers, the absence of climate change education in the curriculum is also a factor of organizational culture, personal values, and positionality-identity. As interventions and changes to curricula are not always in the hands of the avid changes in organization culture are required. Secondly, as educators we need to provide our students with the knowledge and skills associated with climate change education. We need our future leaders to be forward thinking and innovative in industry, which requires them to feel confident to challenge the status quo on climate action and provide alternative solutions. The 'green' transformation of the workforce not only requires employees in technical roles (i.e., engineering), but in non-technical roles (i.e., finance, operations management, marketing, and human resources). This will require Business Schools to upskill and deliver climate change education across the curriculum.

Recommendations are to change organization culture by including climate change education and systems thinking objectives within the annual Personal Development Reviews. Further, recruitment processes should require applicants to demonstrate their suitability not only in their subject area but how their teaching and research links to climate change education and systems thinking.

Research can be further advanced in this area by designing questions on climate change education and revealing positionality-identity of participants. Results can then be applied to dimension V. of the conceptualized matrix (Figure 2). Future Business School curriculum reviews could apply data to all dimensions of the matrix, for purposes of

depth. Future research with a larger sample across Business Schools would also be beneficial.

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