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Integrating Sustainability into a Management Accounting Module in Higher Education: A Reflexive Study

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ABSTRACT

This study responds to calls for embedding sustainability into higher education by exploring the integration of sustainability into an existing management accounting module. Using a case study approach, the paper reflects on the efficacy of a pragmatic strategy described as ‘adding’ or ‘piggybacking’ sustainability content onto current teaching. While transformational change in curricula is often advocated, this work demonstrates the potential of a more incremental approach, particularly in contexts where time and structural constraints exist. The findings suggest that this method is time-efficient, enables the contextualisation of sustainability within an established discipline, and promotes innovative teaching practices. However, several challenges have been identified, including the limited time to address a complex subject such as sustainability in depth, the development of only a ‘weak form’ of sustainability understanding, and a lack of integration with other accounting modules across the programme. Moreover, the success of such initiatives often depends heavily on the enthusiasm and commitment of individual tutors. This case study contributes to the growing body of literature on sustainability in higher education by offering practical insights and critical reflection on early-stage implementation. It highlights the value and limitations of pragmatic approaches, underscoring the importance of further embedding sustainability in a more integrated and systemic manner.

INTRODUCTION

This paper aims to explore the effectiveness of teaching and learning strategies involved in introducing sustainability into an existing management accounting module within the context of higher education. Through a case study approach, the research examines how sustainability can be integrated within the constrained time and structure of a pre-established course. The evaluation of teaching efficacy is grounded in tutors’ reflective insights, gathered through structured questionnaire responses, on the perceived success of embedding sustainability content into the accounting curriculum. More broadly, the study considers the pedagogical implications of incorporating new subject matter, specifically, sustainability, into undergraduate education.

An understanding of the significance of sustainability in higher education is increasingly critical. The prioritisation of sustainability by global organisations, such as the United Nations (2022), underscores the urgency of addressing the climate crisis as both an environmental and societal emergency. As Cho and Costa (2024) argue, sustainability now constitutes essential knowledge for undergraduate students - this case study centres on accounting undergraduates, whose learning is aligned with professional standards in the field. Notably, the establishment of the International Sustainability Standards Board by the IFRS Foundation and the publication of its first global standards in 2023 (IFRS, 2023), alongside proposals by the International Federation of Accountants (IFAC, 2024) to integrate sustainability

throughout professional education, mark a significant evolution in accounting practice.

Although sustainability and sustainable development are not new to either higher education or the accounting discipline (Cho & Costa, 2024; Mathews, 1997), this study begins by examining introductory definitions and conceptual issues related to sustainability. It proceeds by illustrating the concept through practical examples, positioning sustainability within the broader field of accounting (Bebbington *et al.*, 2017; Gibassier & Alcouffe, 2018). However, the study does not extend to technical aspects of accounting for sustainability, such as life cycle costing or material flow cost accounting (Tran & Herzig, 2020).

In terms of contribution, the present research is of specific interest to educators, especially in higher education, considering the inclusion of sustainability into a taught module/programme. The case study describes how sustainability teaching materials were integrated into a management accounting module at a higher education institution.

This study provides a ‘how to’ guide to incorporating sustainable education into an established module, an incremental change process (Mair & Druckman, 2023). It builds on the work of Molthan-Hill *et al.* (2019), who developed a framework incorporating the topic of climate change into existing and new teaching structures. Using existing teaching frameworks, there are two main options: piggybacking and mainstreaming. In piggybacking, material is added to an existing module. In mainstreaming, material is incorporated throughout the entire programme, and a

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cross-curricular approach is adopted.

This work, which details how sustainability can be integrated into a module and addresses the challenges for tutors, is both incremental and pragmatic, marking the beginning of a process of transformational change (Mair & Druckman, 2023). In this work, the field of study is accounting; however, the changes and findings can be applied to any field of study where sustainability is effectively embedded and there is a transdisciplinary interaction of students, including individuals from outside of education (Cho & Costa, 2024). This study adds to prior work by Grey (2013), Wyness and Dalton (2018), and Lee *et al.* (2017), which combine the areas of sustainability and management accounting. The Institute of Chartered Accountants England and Wales (ICAEW) recently launched the ‘Sustainability Certificate’, stating on the website that it ‘incorporates sustainability strategies in day-to-day business, including management accounting.’ (ICAEW, 2023). This supports the inclusion of sustainability within the management accounting area, with a scope that extends beyond technical management accounting competencies, thereby facilitating the integration of the sustainability concept (Hassall *et al.*, 2005).

This study adds empirical pedagogical evidence from two data sources to support the research analysis (Smith, 2015). Firstly, the original material, taken from the authors’ teaching of sustainability in a management accounting undergraduate module (the case study example), is explored. Secondly, there is data from questionnaire responses completed by tutors.

This work examines the prior literature on sustainability, with a definitional focus from an accounting perspective and the pedagogical implications of teaching this concept in the accounting field. A description of the research process is presented, followed by the research data (case study data from the two sources, teaching material and tutor questionnaire results). The conclusion section explores the findings of this study, considering the research question.

LITERATURE REVIEW

This section is divided into two parts; the first section addresses definitional issues related to sustainability in the business world. It is essential in this work to define sustainability as it is being ‘introduced’ to accounting students. The second section concerns the pedagogical challenges of sustainability in the accounting field.

Sustainability - Introductory Definitional Theme

In defining sustainable development, a starting point is ‘...the need to integrate economic and ecological considerations in decision making.’ (Brundtland Report, 1987). In this study, sustainable development is viewed as a movement towards a sustainable position, and the terms “sustainability” and “sustainable development” are used interchangeably. The interconnections between the three common strands of sustainability: social, environmental, and economic (described as the ‘three pillars framework’

by Mair and Druckman, 2023), can also create different perspectives of the overarching sustainability concept, such as eco-effectiveness and eco-justice (Dyball & Thomson, 2013; Schaltegger & Burritt, 2010).

Sustainability from a business perspective is not straightforward, as this term has evolved into a generic term (Kelsall, 2020; Schaltegger & Burritt, 2010). The concept of sustainability challenges traditional accounting views, including the extension of boundary limits. Examples include valuing the negative impact of business actions on the environment, contesting the primacy of profit and business actions, concerns over money measurement systems and how change distorts the evaluation process (Schaltegger & Burritt, 2010).

Sustainability tackles ‘wicked’ problems that are complex, uncertain, ambiguous, and interconnected, such as climate change (Bebbington & Larrinaga, 2014; Wyness & Dalton, 2018). This may be contrasted with the business and accounting realm, where order and certainty are key traits.

In undergraduate accounting textbooks, discussions on sustainability show the promotion of a ‘weak form’ of sustainability where incremental changes to the current business environment led to environmental protection (Gray, 2013). A ‘weak form’ of sustainability is based on a limited understanding of social sciences theory and cultural context, important building blocks in understanding complex social and environmental issues (Larkins *et al.*, 2018), and comprehending ‘wicked issues’ (Wyness & Dalton, 2018). A ‘strong form’ of sustainability needs an understanding of social sciences theory. It challenges established systems to achieve a more balanced society and environmental position (Gray, 2013). A ‘strong form’ of sustainability requires critical engagement and the ‘politics of difference’ or mention of others (Larkins *et al.*, 2018). In terms of teaching and learning, this can be described as ‘ecopedagogy’ (Misiasek, 2020). These challenges accepted norms, including the interconnections between sustainable development and social justice, as well as the importance of student views and vision in the teaching and learning process (Misiasek, 2020). There is also a continuous (de)constructing of the university sector and how it functions and prioritises groups in the justice-based environmental sustainability debate (Misiasek & Rodrigues, 2023). This work introduces the concept of sustainability, with a focus on a weak form of knowledge exchange related to sustainability.

Accounting is about reporting, assurance, and measurement, and in relation to sustainability, it can utilise the Sustainable Development Goals (SDGs) under the auspices of the United Nations (Bebbington & Unerman, 2020). There are 17 SDGs, from global humanitarian targets: no poverty (SDG 1) and zero hunger (SDG 2). As well as those more relevant to businesses: decent work and economic growth (SDG 8) and responsible consumption and production (SDG 12). More firms are now also connecting business performance to the SDGs. Mair and Druckman (2023, p.

324, Table I) view SDGs in relation to Higher Education Institutions (HEIs) as more straightforward to align with educational disciplines. However, they tend towards a weaker form of sustainability, focusing on specific SDGs rather than an interdisciplinary approach. The SDGs also support national targets as part of the 2030 Agenda for Sustainable Development, which is part of a ‘people, planet, prosperity’ plan aimed at strengthening peace and eradicating poverty within this timeframe (UN, 2015).

The Challenges of Incorporating the Sustainability Concept in Accounting Education

Research in sustainability reveals a dynamic environment characterised by social and environmental change, necessitating a shift into areas of business beyond the current boundaries of Corporate Social Responsibility (CSR) (Bebbington & Thomson, 2013; Gibassier & Alcouffe, 2018). Sustainability is a starting point for an organisation to incorporate an enhanced profit, planet, and people outlook (Owen, 2013). Accounting reports on sustainability, supporting and developing a notion of sustainable development (Contrafatto, 2013; Gray, 2013; Gray *et al.*, 2014), or even the idea of accounting for sustainability (Bebbington & Larrinaga, 2014; Gray *et al.*, 2014). For this, accounting is more reflexive, reporting on social issues and supporting a transformative process (passion praxis), especially for oppressed groups (Contrafatto, 2013; Grey *et al.*, 2014; Wong *et al.*, 2021). The focus moves to a prospective (from retrospective) view of the firm’s performance, ‘a more holistic approach to reporting, based on internal management accounting information and performance management’ (Owen, 2013, p. 351). Management accounting is primarily seen as supporting managers to achieve an economic advantage. This is problematic in developing a business along more sustainable lines (Bebbington & Thomson, 2013). Sustainability has not displaced the economic rationale, but it is now embedded and combined with these demands, rather than just being an add-on; this moves management accounting to a form of ‘boundary crossing’ that requires fundamental changes to processes (Contrafatto & Burns, 2013). The absence of social aspects of sustainability and the inclusion of environmental measures, such as carbon reporting, have been discussed (Bebbington & Thomson, 2013). The limited embodiment of sustainability concerns in current management accounting practice is one reason this work examines an ‘introduction’ to sustainability in management accounting.

The economic focus of accounting often runs counter to social and environmental concerns, but accounting can be taught in ways to explore the ‘hidden curriculum’ and critique accounting concepts (Gray *et al.*, 2014; Laine, 2013; Thomson & Bebbington, 2004; Illich, 1971; Tinker, 1985; Wong *et al.*, 2021). The teaching approach is critical, with a more dialogic (joint enterprise) between the teacher and student, praxis is exhorted – an approach whereby action and change are a central part of the process (Contrafatto *et al.*, 2015; Cho & Costa, 2024; Cornet *et al.*, 2024; Gray

et al., 2014; Thomson & Bebbington, 2004; Thomson and Bebbington, 2005, cite Freire 1996; Wong *et al.*, 2021). In contrast, the banking approach to teaching creates an image of knowledge being deposited in students, characterised by tutor-led instruction with limited discussion and minimal critical thought required (Cho & Costa, 2024; Thomson & Bebbington, 2004, 2005). The ‘banking’ approach to teaching is considered the dominant method for teaching Social and Environmental Reporting (SER) (Thomson & Bebbington, 2005). As against this are approaches to stakeholder engagement (a dialogic approach) with SER posing more real-world problems and allowing stakeholders to challenge the ‘hidden curriculum’ supporting oppression and leading to transformative change (Thomson & Bebbington, 2005, p. 527). Activism is also central to a dialogic process (Contrafatto *et al.*, 2015; Cornet *et al.*, 2024; Thomson *et al.*, 2015). Sustainability can be explained through case study examples, which should underpin accounting education in all areas, preparing the students for the business environment (Cornet *et al.*, 2024; Creel & Paz, 2018). Using a Problem-Based Learning (PBL) approach enables the analysis of complex sustainability issues in greater depth, supporting transformative learning approaches to traditional accounting thought processes (Cho & Costa, 2024; Saranvanamuthu, 2015; Wyness & Dalton, 2018). For undergraduate accountants, a small ethnographic study found that understanding a new topic, such as sustainability and accounting, was more important than any other skill or technical development (Wyness & Dalton, 2018). Active engagement in the learning process makes a difference in student behaviour and understanding of environmental sustainability (Lee *et al.*, 2017). McCowan (2023) examines the significance of a critical questioning mindset and deliberative approach to comprehending climate change more deeply than would be achieved through a transmissive, unquestioning approach to teaching and learning.

MATERIALS AND METHODS

Research Approach

The research approach in this work is qualitative, following an interpretive research philosophy (Smith, 2015), accepting the organisational world as socially constructed. The interpretive philosophy supports research built on the informants within the work, accounting tutors, and the theory built up from the empirical evidence (Gioia *et al.*, 2012; Smith, 2015). The findings are context-specific, which cannot be generalised, but they contribute to a body of knowledge and provide future research direction (Tillmann & Goddard, 2008). A systematic approach is employed in this research: ‘1st-order’ concepts are developed in Section 4, which presents the research findings, and ‘2nd-order’ themes are developed in Section 5, which discusses the findings (Gioia *et al.*, 2012). This is a pragmatic piece of research, not as a theoretical construct, but in terms of providing truth and sensemaking to actions taken (Baker & Schaltegger,

2015). Tillmann and Goddard (2008) developed, from a grounded theory base, the use of sensemaking in examining the development of strategic management accounting in a German multinational company. The sensemaking construct has often been applied in times of crisis and when there is ambiguity, a common claim about the sustainability concept (Hoang, 2023). The introduction of sustainability into an accounting module is analysed in this study, specifically how tutors view this introduction, and in addition, the possibilities of new ideas in the accounting context (this has been defined as a focus on ‘users and possibilities’ in Baker and Schaltegger, 2015).

This study develops data to an illustrative ‘thematic’ level (Llewelyn, 2003). The teaching material provides a snapshot of introducing sustainability to accounting students. The tutor questionnaire results are complementary, providing insights into the views of accounting tutors on pedagogical issues related to sustainability and accounting.

Data Collection

This study was conducted at a post-1992 university in the UK. The module at the centre of the study is a third-year management accounting module for accounting undergraduate students. The degree programme is subject to university regulations and HEI quality control procedures through the Quality Assurance Agency (QAA). Additionally, it received exemptions from professional accountancy bodies and is very mindful of the syllabi of those bodies. Two data sources have been used in this study. Firstly, the teaching materials used in delivering the session, which introduced the sustainability topic, were examined. A questionnaire was then issued and completed by teaching staff from three post-1992 universities regarding the accounting programmes.

RESULTS AND DISCUSSION

This section analyses the data from two sources: teaching

material and tutor feedback.

Teaching Material

The first source material is the introduction to the sustainability teaching material. This occurred at a UK post-1992 university, where the module Advanced Management Accounting (AC3200) is one of six level 6 compulsory modules for an undergraduate accounting programme. All modules are 20 credit-bearing and run for two semesters. Recently, the number of students enrolled in the module has been between 70 and 90.

There are twenty-two taught weeks, of which the penultimate (week 21) session is on social-environmental accounting. The two main reasons why the module leader included in the penultimate session of the module social and environmental accounting where: firstly, to allow more technical topic areas to be covered earlier in the module; secondly, sustainability is ‘introduced’ to students in a challenging and questioning manner, and students at this later stage of the module are more confident to engage in discussion.

No other module in the programme covers social and environmental accounting. Professional ethics, corporate governance and the CSR concept are covered in Advanced Finance Accounting (AC3100) and Auditing in Theory and Practice (ACC3300) modules.

The teaching and learning material for the week 21 session on SEA includes lecture material – 19 PowerPoint slides covering professional body engagement with SEA, measurement, full cost accounting, life cycle costing, Environmental Balanced Scorecard, sustainability and sustainable development, Integrated Reporting, the tax gap, and social audits.

An illustrative example is slide 8 (Figure 1), which has the heading – ‘A Question to ponder...should BAT and Imperial Tobacco be responsible for the related health costs of former smokers?’

Slide 8 follows a pedagogical approach that uses real-life examples to illustrate significant issues in a social and

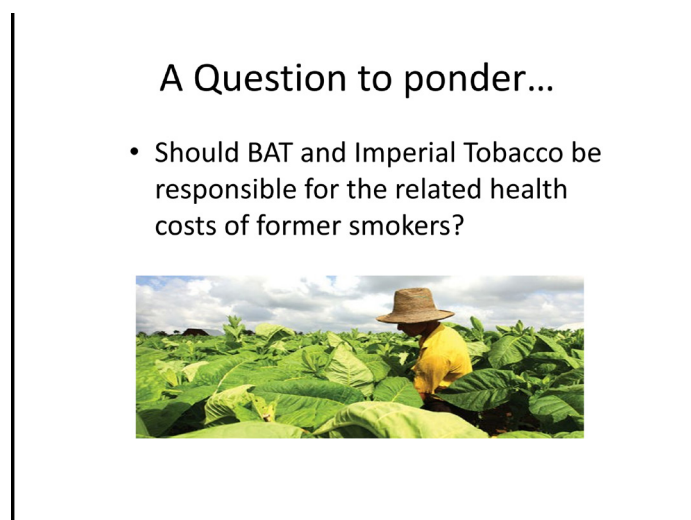


Figure 1: Illustrative PowerPoint Slide 8 – A question to ponder

environmental accounting discussion. Other examples used include the BP Gulf of Mexico oil spill, BAT and Imperial Tobacco, Ford and the Ford Pinto, and Volkswagen and the emissions scandal.

The BP oil rig explosion and subsequent oil spill in the Gulf of Mexico highlight the risks associated with a firm's operations, including financial costs and environmental impacts resulting from these operations.

The BAT and Imperial Tobacco business models illustrate social issues, and students explore the concept of the social contract. In this case, the fact that these two firms' products (carcinogenic cigarettes) have a significant social impact (Jha, 2005; Thomson *et al.*, 2015).

In the case of the car Ford Pinto (1978), a video clip of the explosive impact of a rear collision on the Pinto, with a known fuel tank issue, highlights unethical business behaviour. More recently, in 2015, the example of Volkswagen cars highlighted ethical concerns within the firm, as it misled customers and regulators over car emission levels (Hotten, 2015).

These cases are discussed in the context of changing social norms in business over the forty years between 1970 and 2010. In the case of the Ford Pinto, produced between 1971 and 1980, the problem had been known since 1972 (Dowie, 1977). In the case of BAT and Imperial Tobacco, the definitive causal link between cigarettes and cancer was stated in the Royal College of Physicians' report in 1964 (Alberg *et al.*, 2014; Jha, 2005). The BP Gulf of Mexico disaster occurred in 2010; the

details continue to evolve, as evidenced by the initial estimated cost of \$20 billion for compensation and cleanup, which had risen to a 'final' figure of over \$53 billion by 2015 (Bawden, 2015).

The importance of visual impact in a PowerPoint presentation has been demonstrated by Contraffato *et al.*, (2015), who follow a dialogic and activism approach. Visual imagery is an important part of a lecture and in a teaching and learning process and in dialogic research (Contraffato *et al.*, 2015). Four visual images are used within the teaching material for week 21:

Slide 1 – a word cloud showing the frequency of the different words used under the term Social Environmental Accounting.

Slide 8 (figure 1) - a picture of a tobacco farmer to start a discussion around the social contracts of BAT and Imperial Tobacco and power dynamics in cigarette production, farmers commonly producing tobacco crops on a subsistence basis, with profits going to the global cigarette manufacturing firms.

Slide 10—a diagram showing three boxes with sustainability viewed as a linkage between social, environmental, and economic boxes (in-line with the 'three pillars framework' discussion in Mair and Druckman (2023).

Slide 13 – an input-output diagram of the Integrated Reporting framework.

A piggybacking approach has been observed in granular detail in this study, and Table 1 summarises the benefits and challenges of using this approach.

Table 1: The benefits and challenges of piggybacking sustainability in a management accounting module

Benefits	Challenges
1. Quick and easy to start this process.	1. Time challenge, with limited time, the understanding is likely to be more surface learning.
2. Allows more flexibility and innovation in teaching and learning.	2. The relationships with the rest of the accounting programme can limit the impact, spread, and application of the concept.
3. Provides an accounting context (framework) to which sustainability can be connected.	3. It needs to be driven by passionate staff with an interest in social and environmental issues and how this affects accounting.
4. Allows passionate staff to develop the teaching and learning process.	

It is one of four approaches (Molthan-Hill *et al.*, 2019), with the two related to existing structures, piggybacking and mainstreaming. Piggybacking is used in this case study approach, inserting it into the module scheme of work; introducing a topic is a quicker, less regulated process and allows more creativity from the teaching perspective and leads to dialogic development (Cho & Costa, 2024; Contraffato *et al.*, 2015); including sustainability in the management accounting arena helps connect to studies beyond this topic; it is included by tutors with an interest in this topic helping engage students (Wong *et al.*, 2021). There are challenges in the piggybacking approach: it is challenging to develop a depth of understanding in the limited time this approach affords (in the case study this was in one session), this study explores an introduction

to sustainability, a weak-form view; the relationship with the accounting programme has not been developed and so sustainability can sit at odds with other teaching on the programme and limit understanding of the concept; the development within the module must be started by tutor interest and not mandated as this becomes a banking exercise not a dialogic process (Contraffato *et al.*, 2015; Gray *et al.*, 2014; Thomson & Bebbington, 2004; Thomson & Bebbington, 2005; Freire, 1996; Wong *et al.*, 2021).

Accounting Tutor Views

A survey of accounting teaching staff on the inclusion of sustainability in an accounting programme from three universities in the UK was conducted using Google

Forms. All staff involved in the accounting programmes in the schools were contacted by email to complete the questionnaires. Eighteen staff responded from the thirty-nine combined staff in the departments (46% response rate). The eighteen completed questionnaires provide evidence in this initial study of staff views on sustainability and accounting. The staff were contacted directly by email, which is a primary reason for the high response

rate. The questionnaire was completed anonymously, and the data collection process was approved through the university's ethics committee (UCLan, Ethics Committee Application, approval reference: BAHSS2 0103). The questionnaire consisted of sixteen questions, and the percentage results for each question are presented in Table 2 (excluding question 16, which was for general feedback).

Table 2: Sustainability and accounting: tutor questions – Google Forms online questionnaire and percentage results (18 responses).

Question	Percentage (%) results
Q1. How long have you been teaching accounting in the Higher Education environment?	Up to 2 years – 11.0%
	2-5 years – 27.8%
	5-10 years – 44.4%
	10-20 years – 16.7%
Q2. What subject areas in accounting do you teach?	Management Accounting – 55.6%
	Financial Accounting – 50.0%
	Corporate Finance – 38.9%
	Audit and Assurance – 33.3%
	Taxation – 22.2%
	IT – 11.1%
Q3. What programmes do you teach on?	Undergraduate – 88.9%
	Postgraduate – 66.7%
	Professional accounting – 27.8%
	Taught research – 22.2%
Q4. Are you a member of one of the following bodies?	ACCA/ICAEW/CIMA – 72.2%
	HEA/CABS – 33.3%
	BAFA/BAM – 16.7%
Q5. Sustainability can be described in accounting terms as 'the impact of social, environmental and economic factors on an organisation'. How would you best describe the development of the sustainability concept in accounting?	A well-formed concept though less well linked to accounting issues – 38.9%
	A developed term that is now mainstream – 22.2%
	A new or emergent term – 22.2%
	A fully formed concept clear inside and outside the accounting field – 16.7%
Q6. Where would you place the importance of sustainability in accounting?	Valuable but difficult to align to accounting – 70.6%
	Most important concept in accounting – 17.6%
	Limited value – 5.6%
	Neutral impact on accounting – 5.6%
Q7. When it comes to understanding sustainability, where would you get most of your information from?	Accounting organisation sources e.g. ACCA/ICAEW/CIMA – 50%
	Textbooks and or journals – 50%
	Social media and the internet – 44.4%
	Education and or training – 38.9%
	Media – newspapers and TV – 38.9%
Q8. Do you teach sustainability as part of accounting concepts?	Yes – as a developing part of a module – 27.8%
	Limited introductory or as a background – 27.8%
	No – may comment on as a context – 22.2%
	No – 16.7%
	Yes – as a central part or stand-alone module – 5.6%

Q9. Which of the following do you know about?	Integrated Reporting – 77%
	Environmental Social and Governance – 50%
	Triple Bottom Line – 50%
	Sustainable Development Goals – 44.4%
	Global Reporting Initiative – 27.8%
Q10. In your opinion, should sustainability be taught as a separate module or as an addition in other accounting areas?	Teach on its own – 33.3%
	Combined with management accounting – 33.3%
	Combined with financial accounting/ taxation/ auditing/ all modules/ many accounting modules/ financial management and auditing (separate questions) – all scored 5.6%
Q11. What are the main challenges to teaching sustainability in the accounting field?	Difficult quantifying sustainability – 77.8%
	Divergence with accounting concepts – 27.8%
	Too theoretical and not practical – 16.7%
	Lack of practical case studies and examples – 16.7%
	Case studies which illustrate link/relevance between accounting and sustainability – 5.6%
Q12. What approaches to teaching sustainability would work best?	Case studies – 72.2%
	Problem-solving exercises – 50%
	Theoretical discussions including ethical debates – 44.4%
	Include as context in calculation questions – 38.9%
	I think the approach would depend on level – 5.6%
Q13. Have students you have taught recently shown any interest in sustainability and accounting?	Yes – level of interest around basic issues – 33.3%
	No – 22.2%
	Limited interest in connection with accounting – 22.2%
	No – limited interest outside of accounting – 16.7%
	Yes – significant concern around accounting and sustainability issues – 5.6%
Q14. How could students be further engaged with sustainability for accounting?	Real-world case studies – 83.3%
	Link more closely to accounting data – 61.1%
	Highlight global issues – 50%
	More relevant examples e.g. include service firms such as accountants – 38.9%
	Engage with sustainability projects – 5.6%
Q15. How would you rate the following Sustainability Development Goals (SDGs) in relation to accounting? (1 - not relevant, 5 - core issue)	See Table II
Q16. Any additional comments?	

There are concerns with interpretive research around reliability, replicability, and rigour of the findings. To mitigate these issues, the questionnaire data collection and analysis were extracted and analysed by one researcher; this analysis was reviewed by another researcher(s). The data collection and analysis process has been kept as transparent as possible to allow for scrutiny. This is a pilot study approach to reviewing this issue.

Question 15 – The Sustainability Development Goals

analysis provides detailed information, and therefore, the results are presented separately in Table 3.

In analysing the tutor responses (see above Tables 2 and 3), the questions have been grouped into the following themes: background to the sample, sustainability issues, developing knowledge on sustainability issues, developing sustainability in the teaching of accounting, student engagement and motivation, and sustainability connected to the SDGs.

Table 3: Sustainability and accounting, percentage results in detail, Question 15 – Sustainable Development Goals (SDGs)

SDG	Not relevant %	Issue, but not for accounting %	No impact %	Relevant but limited-service offer %	Relevant and core service %
1. No poverty	5.6	33.3	11.1	38.9	11.1
2. Zero hunger	5.6	38.9	16.7	22.2	16.7
3. Good health and wellbeing	-	27.8	-	44.4	27.8
4. Quality education	-	16.7	11.1	27.8	44.4
5. Gender equality	5.6	33.3	11.1	27.8	22.2
6. Clean water and sanitation	-	44.4	16.7	22.2	16.7
7. Affordable and clean energy	5.6	11.1	5.6	44.4	33.3
8. Decent work and economic growth	-	-	5.6	22.2	72.2
9. Industry innovation and infrastructure	-	-	16.7	11.1	72.2
10. Reduced inequalities	5.6	27.8	27.8	22.2	16.7
11. Sustainable cities and communities	-	5.6	11.1	44.4	38.9
12. Responsible production and consumption	-	11.1	11.1	11.1	66.7
13. Climate action	-	38.9	11.1	22.2	27.8
14. Life below water	5.6	50.0	22.2	11.1	11.1
15. Life on land	5.6	38.9	16.7	22.2	16.7
16. Peace, justice, strong institutions	-	22.2	22.2	22.2	33.3
17. Partnerships for the goals	-	-	16.7	55.5	27.8

Background to the Sample (answers to questions 1-4)

The accounting tutors are from three post-92 HEIs in the UK. Over 88.9% of the sample group has more than 2 years of teaching experience, with 61.1% having five or more years of experience. The term ‘tutor’ was used to refer to a range of teaching staff, with the majority being Senior Lecturers or Lecturers in the UK higher education sector. All the tutors had been module leaders and so were able to choose the material included in a module. Of the subject areas taught, management accounting scored the highest at 55.5%, followed by financial accounting at 50%, corporate finance at 38.9%, and audit and assurance at 33.3%. 88.9% of respondents teach undergraduate programmes and 66.7% teach postgraduate programmes. 72.2% are members of one of the following chartered accountancy bodies in the UK - Institute of Chartered Accountants England and Wales (ICAEW), Association of Chartered Certified Accountants (ACCA), Chartered Institute of Management Accountants (CIMA).

Main Findings

The following findings from the questionnaire, which concern sustainability, have been grouped as part of the thematic analysis of the results.

Understanding of sustainability (answers to Q5 and Q6) - In answering Q5, the dominant view (38.9%) of the tutors was that whilst sustainability was a clearly defined concept, it was not well connected to accounting. This finding was backed up by the answer to Q6, with 70.6% of tutors believing the sustainability concept is valuable

but difficult to align with accounting issues.

Developing tutor’s knowledge on sustainability issues (Q7, 8, and 9) - In terms of understanding sustainability, and the development of knowledge on this topic and the underlying issues the first thing is that tutors use a range of sources (Q7), with 50% picking both accounting professional bodies and textbooks as the main way to gain information. Social media is quite popular, with 44.4% of respondents also using it to develop knowledge in this area. Additionally, 38.9% use education and training for this purpose. The next question (Q8) answers show that 33.4% teach it as a central or developing part of a module, 38.9% do not cover the topic, and 27.8% introduce it in a limited background manner. Adding those who teach it in a limited way to those who do not cover it amounts to 66.7% of the tutors.

The final question (Q9) and knowledge of common sustainability concepts were assessed. The most well-known concept was Integrated Reporting, with 77.7% recognition, followed by ESG (Environmental, Social, and Governance) and TBL (Triple Bottom Line), both at 50%, and SDG (Sustainable Development Goals) at 44.4%. Only 27.8% are aware of the Global Reporting Initiative (GRI).

Developing sustainability in teaching accounting (Q10, Q11, and Q12) - In terms of how to develop the teaching of sustainability in accounting, there were two clear choices (Q10), with 33.3% going for teaching sustainability either as a stand-alone module or as part of a management accounting module.

In response to the challenges in teaching sustainability (Q11), 77.7% felt that the problems were primarily related to trying to quantify the concept, with a secondary view of 27.8% extending this as an issue in the divergence between fundamental accounting concepts and sustainability.

When considering the best approach to teaching sustainability (Q12), 72.2% preferred the idea of case studies, followed by problem-solving at 50%, theoretical discussions at 44.4%, and contexts for calculation questions at 38.9%. This indicated a range of approval for different approaches.

Student engagement and motivation (Q 13 and Q14) - It would appear to be at a tipping point in terms of student engagement, with the views that 38.9% of students had shown interest in these issues and the same number were not interested, with the balance of 22.2% with a limited interest in connection with accounting (a lukewarm verdict).

Relationship of sustainability with SDGs (Q15 – see Table II) - This question was posed in relation to the 17 SDG goals adopted in 2015. Each question was scored based on 5 ratings on accounting and accounting services from 1. not relevant issue; 2. relevant issue but not to accounting; 3. no impact; 4. relevant but limited-service offer; 5. relevant and core service offer.

The SDGs can be viewed in three groups:

1. SDGs viewed most positively as relevant but with a limited-service offer in accounting – decent work and economic growth (SD8), industry innovation and information (72.2%) (SD9), and responsible production and consumption (66.7%) (SD12);

2. SDGs with limited connections with accounting – (are considered as issues but not for accounting) – life below water (50%) (SD14); zero hunger (38.8%) (SD2);

3. SDGs with mixed results matched positive and negative connections – climate action (SD13); peace, justice, and strong institutions (SD16); gender equality (SD5), and no poverty (SD1).

The findings from the datasets are discussed in relation to previous research findings in the conclusion section.

CONCLUSION

The conclusion tackles the research question, exploring the effectiveness of teaching and learning when introducing sustainability in a HEI module, management accounting. Three main themes emerged: the importance of sustainability in the accounting domain (Cho & Costa, 2024), the best approach to positioning sustainability in an HEI accounting programme (Mothan-Hill *et al.*, 2019), and effective approaches to teaching sustainability.

According to the tutor responses, sustainability is viewed as a significant issue (Q6). In the sample, tutors would benefit from guidance as they currently introduce it in a limited way or not at all (67% confirmed this in their answer to Q8). A clear understanding of the role of accounting and economic pressures is vital in a deeper ‘eco-pedagogical’ teaching and learning process (Misiaszek, 2020). Additionally, there is a need to use

a wider range of sources to cover sustainability issues in their teaching material (supporting views made by (Bebbington & Larrinaga, 2014; Cho & Costa, 2024; Cornet *et al.*, 2024; Gray *et al.*, 2014; Thomson *et al.*, 2015; Wong *et al.*, 2021). Accounting tutors support this (Q7) using a range of sources for information, including professional accounting bodies and social media. Accounting tutors still see challenges in understanding and relating this concept to accounting (Q11).

The development of sustainability poses a challenge to traditional accounting views (Cho & Costa, 2024; Wong *et al.*, 2021), as supported by accounting tutors (Q11). Integrating sustainability teaching throughout all existing modules/programmes, a mainstreaming approach, can be seen as the next stage to learning about sustainability following the piggybacking approach (Molthan-Hill *et al.*, 2019, p. 1095). Furthermore, the transdisciplinary teaching of sustainable development is necessary within and across disciplines (Cho & Costa, 2024; Misiaszek, 2020).

A key finding is the importance of how you teach the subject material (Wong *et al.*, 2021); using active and engaged sessions with real-world case studies is more effective. Emerging from this is the question of whether sustainability would benefit from being taught as a separate subject. There are concerns over challenges to the understanding of sustainability (Bebbington & Larrinaga, 2014), and challenges to basic tenets of accounting, indicating that a separate module allows the time and space to explore these challenges. Supporting students to start challenging basic accounting standards must be carefully managed; there are, though, opposing views as to whether this should be a more sympathetic or challenging approach (Gray, 2013; Laine, 2013). The findings are based on introducing a weak form of sustainability to accounting students. Further research is needed to explore how best to develop this into a strong-form version of sustainability. This includes reevaluating the university’s role and the challenges it faces in supporting a justice-based approach to environmental sustainability (Cho & Costa, 2024; Misiaszek & Rodrigues, 2023).

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