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Embedding Sustainability Education And Increasing Cognitive Complexity Into Hospitality And Tourism Curricula – An Initial Framework

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ABSTRACT

Since 2004, Gastronomy is amongst the central themes addressed by the UNESCO Creative Cities Network. Promoting sustainable business practices, raising public awareness of sustainable gastronomy and sustainability education rests at the heart of this network.

In a previous paper, the authors identified the QAA document "Education for Sustainable Development Guidance" as the most comprehensive framework currently available for embedding sustainability competencies into university curricula. Based on UNESCO's key competencies for sustainability, the guidance document systematically identifies knowledge, skills and graduate attributes linked to those competencies and recommends pedagogic approaches thought to support their development in university students.

Academic research into sustainability education has however highlighted that more rigorous testing is required to validate the proposed pedagogical approaches as effective methods for cultivating the identified set of key competencies. Further research is also needed to explore and validate suitable assessments methods for testing the attainment of associated knowledge and skills. As the current QAA guidance does not differentiate between lower-level and higher-level knowledge and skills there is scope for developing a taxonomy of sustainability learning outcomes to inform curriculum development at different undergraduate levels.

This leads to the purpose of the paper, which is to propose a framework for assessing the comprehensiveness and of sustainability education. Firstly, the paper reflects on the concept of sustainable gastronomy. Secondly, a taxonomy of sustainability learning

outcomes (SLOs) aligned with higher education demand levels 4, 5 and 6 is devised. The undergraduate degree programme in International Hospitality and Tourism Management at the Gloucestershire Business School is then used as a pilot for trialling its use in assessing the embeddedness of SLOs at each level. The paper ends with discussing how the insights derived from this pilot can inform the creation of a developmental self-assessment tool for undergraduate students and how, in turn, the outcomes of such self-assessments can inform the advancement of sustainability education.

1. Introduction

Since the adoption of the United Nations Sustainable Development Goals (SDGs) in 2015, higher education institutions have been given the mandate of promoting sustainability education. This means that management education must impart knowledge and develop competencies needed by future leaders to address complex social, economic and environmental challenges (Zamora-Polo and Sanchez-Martin, 2019; Stough et al, 2018. Mula et al, 2017). In the field of gastronomy, this goes hand in hand with embedding the key principles of the Strategic Framework of the United Nations Food and Agricultural Organisation (FAO) concerned with sustainable food production and consumption (FAO Website, 2021).

This paper firstly reflects on the concept of sustainable gastronomy. Secondly, a taxonomy of sustainability learning outcomes (SLOs) aligned with higher education demand levels 4, 5 and 6 is devised. With gastronomy being a central part of hospitality and tourism experiences, the undergraduate programme in International Hospitality and

Tourism Management at the Gloucestershire Business School is then used as a pilot for trialling its use in assessing the embeddedness of SLOs at each level. The paper ends with discussing how the derived insights can inform the creation of a developmental self-assessment tool for undergraduate students and how, in turn, the outcomes of such self-assessments can inform the advancement of sustainability education.

This research in progress is informed by the University of Gloucestershire's (UoG) expertise in this area. Recognising sustainability as an educational priority to inspire change in individuals, professions and organisations, UoG hosts a United Nations Regional Centre of Expertise in sustainability education and has pioneered the transformation of the whole university towards sustainability.

2. Gastronomy and sustainable development

FAO (2021) defines sustainable gastronomy as cuisine that considers the origin of ingredients, how the food is grown, how it is supplied to markets and eventually served to consumers. Key aspirations include innovative and equitable farming solutions that reduce carbon emissions and support local farming communities through local sourcing. A further aspiration is the preservation of culinary roots and traditional crops that are not only central to delivering culturally authentic gastronomy experiences, but also to enriching diets. Finally, with a third of all food produced being wasted, sustainable gastronomy is concerned with reducing food waste through management and consumer education. These aspirations are linked directly to SDG 2 (Zero Hunger), SDG 3 (Good Health and Wellbeing) and SDG 12 (Responsible Consumption and Production).

Underpinning sustainable gastronomy are FAO's five key principles of sustainability for food and agriculture. These are articulated as an emphasis on (1) increasing productivity, employment and value addition in food systems, (2) protecting and enhancing natural resources, (3) improving livelihoods and fostering inclusive economic growth, (4) enhancing the resilience of people, communities and ecosystems, and (5) adapting governance to new challenges.

To implement those principles, FAO (2018) called on decision-makers in the public, private and third sector to take action in a total of twenty areas. Whilst the majority of these actions are directed towards policy-makers and food producers, there is a growing expectation that gastronomy managers inform the design of their culinary and experiential concepts, their supply chain strategies and social responsibility initiatives in line with those actions. Some of the proposed actions, such as encouraging reuse and recycling, promoting sustainable consumption, and improving nutrition and promoting balanced diets are directly relevant to the core gastronomy business and by extension to the wider hospitality and tourism industry. This leads to the challenge of appropriately embedding sustainability education into relevant university curricula.

3. Developing a taxonomy of Sustainability Learning Outcomes (SLOs)

Clearly formulated learning outcomes are central to rigorous programme design and define what knowledge and competencies graduates should have attained at the end of their studies (Kioupi and Voulvoulis, 2020). The process of embedding sustainability education into curricula thus needs to start with the formulation of an appropriate set of

SLOs. Formulating these requires a systematic definition of sustainability competencies and associated knowledge and skills that is informed by commonly accepted sustainability paradigms and multi-disciplinarity (Williamo et al, 2018).

Previous work by the authors (Sulkowski, Greenaway and Vieira, in press) identified the UK's Quality Assurance Agency (QAA)'s Education for Sustainable Development Guidance (QAA, 2021) as the most comprehensive articulation of general sustainable development competencies. The competencies identified include (1) normative competency, (2) self-awareness, (3) integrated problem-solving, (4) collaboration competency, (5) strategic thinking, (6) critical thinking, (7) anticipatory thinking and (8) systems thinking (QAA, 2021).

In addition to providing more detailed descriptions of each competency, the guidance also identifies corresponding knowledge, skills and attributes. The document therefore provides a comprehensive framework for formulating SLOs adapted to different subjects. It also presents a catalogue of suitable pedagogic techniques including collaborative learning, enquiry-based learning, play-based learning, storytelling and problem-based learning and links these to specific competency development.

What it does not provide is a taxonomy that would assist in formulating a progressive set of SLOs based on increasing academic demand levels. Williamo et al's (2018) GHH model offers a potential reference point for the development of such taxonomy. The framework is an epistemological and heuristic tool for the comprehensive study of complex phenomena integrating the elements of **G**eneralism, **H**olism and **H**olarchism. Generalism

extends to the two dimensions of object generalism and viewpoint generalism, whereby the former examines multiple objects within the context of the same framework (such as multiple waste materials within the context of recycling) and the latter examines the same object from multiple perspectives (such as multiple stakeholder perceptions on recycling). Holism offers a systems perspective by studying interrelationships between different agencies and their impact on the evolution of the system. Holarchism provides an advanced perspective by additionally viewing systems as hierarchical, whereby some entities are located at the same systemic level and others either at higher or lower levels of the same hierarchy. Examples of this would be complex interrelationships between local, national and global policymaking or industries made up of different groups of organisations including SMEs, large corporates, professional associations and regulatory bodies.

Bloom's taxonomy of cognitive skills is typically used to formulate learning outcomes at different higher education levels with lower level outcomes such as knowledge and understanding typically linked to Level 4, mid-level learning outcomes such as analysis and application typically linked to Level 5 and higher-level learning outcomes such as critical evaluation and synthesis typically linked to Level 6 and beyond (see for example Pappas, Pourrakos and Nagel, 2013). Providing increasingly complex perspectives on systems thinking, the GHH framework can be used in a similar way to create a progressive set of learning outcomes. Here, generalist thinking would most likely inform Level 4 SLOs, holist thinking would inform Level 5 SLOs and holarchist perspectives would be introduced at Level 6 and beyond.
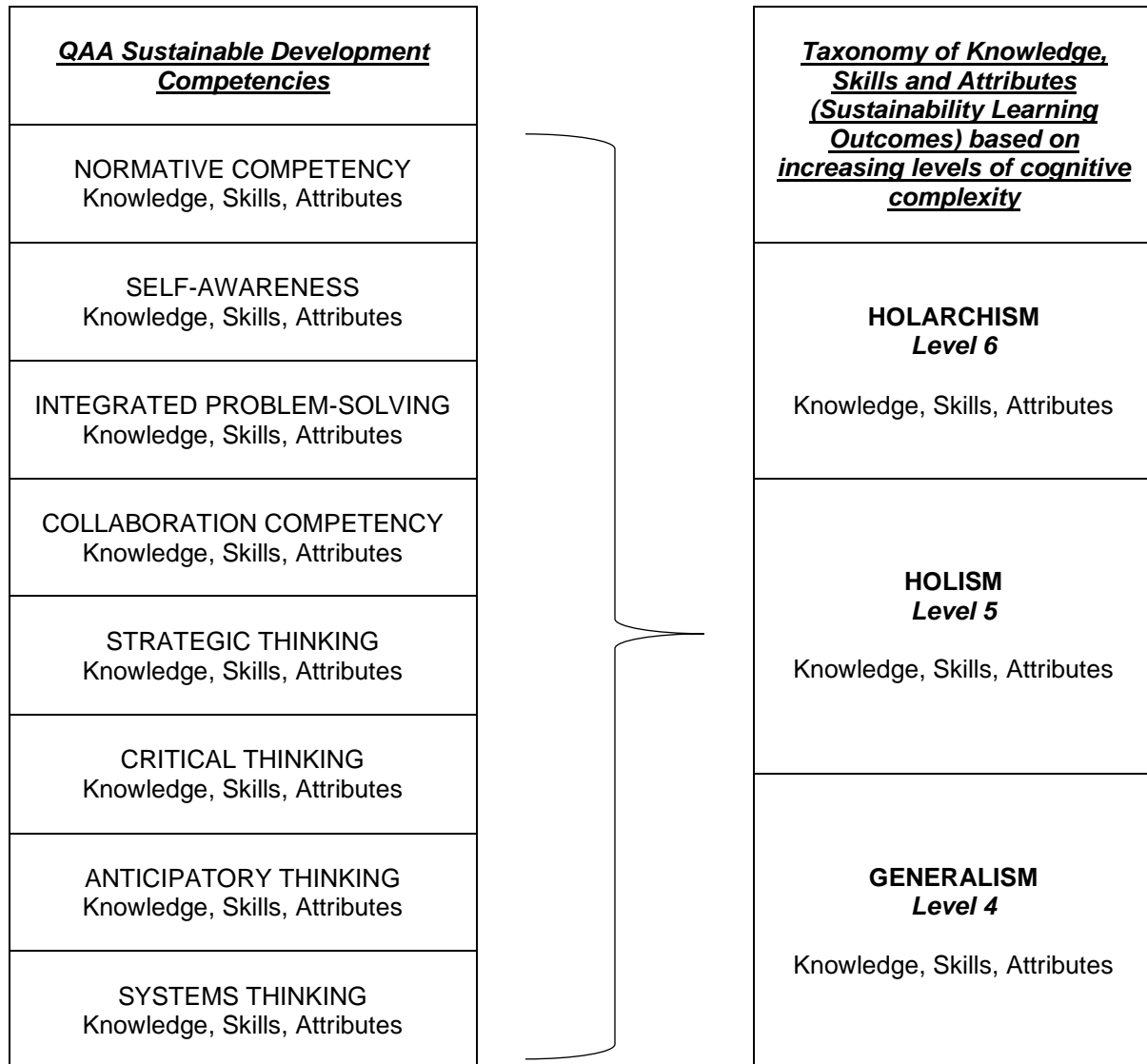
4. Methodology

The initial phase of conceptualising the taxonomy and curriculum audit tool consisted of two stages. The first stage involved a review of the knowledge, skills and attributes linked to the different sustainability competencies identified in the QAA guidance document. It was found that the development of each competency required the development of cognitive skills of increasing complexity suggesting that curricula would need to be designed in a way that enables learners to acquire lower level cognitive abilities in relation to each competency before moving on to developing higher level cognitive abilities (Figure 1).

A combined total of 125 elements of knowledge, skills and attributes were ranked based on their level of cognitive complexity and linked to Williamo et al's (2018) GHH model. A combined total of 35 elements of knowledge, skills and attributes were found to correspond to generalism, a combined total of 40 were found to correspond to holism and a combined total of 50 were found to correspond to holarchism. This created an initial framework for linking SLOs to increasing academic demand levels.

The second stage involved a review of UoG's BA Hons International Hospitality and Tourism Management programme, whereby module learning outcomes were mapped against the framework. The purposes were to assess how comprehensively the competencies are embedded in the curriculum and to establish the validity of using Williamo et al's (2018) GHH model for creating a taxonomy of SLOs to inform curriculum development at different academic levels.

QAA Sustainable Development Competencies	Taxonomy of Knowledge, Skills and Attributes (Sustainability Learning Outcomes) based on increasing levels of cognitive complexity
NORMATIVE COMPETENCY Knowledge, Skills, Attributes	
SELF-AWARENESS Knowledge, Skills, Attributes	HOLARCHISM Level 6 Knowledge, Skills, Attributes
INTEGRATED PROBLEM-SOLVING Knowledge, Skills, Attributes	
COLLABORATION COMPETENCY Knowledge, Skills, Attributes	
STRATEGIC THINKING Knowledge, Skills, Attributes	HOLISM Level 5 Knowledge, Skills, Attributes
CRITICAL THINKING Knowledge, Skills, Attributes	
ANTICIPATORY THINKING Knowledge, Skills, Attributes	GENERALISM Level 4 Knowledge, Skills, Attributes
SYSTEMS THINKING Knowledge, Skills, Attributes	

Figure 1. Reordering Sustainable Development Competencies into a Taxonomy of Sustainability Learning Outcomes (Adapted from QAA, 2021 and Williamo et el, 2018)

5. Findings and Discussion

Initial findings suggested a coverage of all eight competencies and of almost all knowledge elements, skills and attributes in the curriculum. Not all relevant learning outcomes identified in the module descriptors explicitly mentioned the term sustainability, but they were nevertheless found to assist learners in the attainment of relevant knowledge, skills and attributes.

Findings also suggested the validity of using Wiliamo et al's (2018) GHH model as a relevant framework for embedding SLOs at different academic demand levels. Those linked to the concept of generalism were largely found in Level 4 modules. SLOs linked to the concept of holism were largely found at Level 5 and those linked to the concept of holarchism were exclusively found at Level 6. There was some convergence at Levels 4 and 5 where some modules introduced both generalist and holist thinking.

There was some evidence of competency clustering within modules. For example, collaboration competency seemed to be emphasised in strongly applied modules involving group work and client briefs. Anticipatory and systems thinking appeared to be clustered in modules addressing planning scenarios and multi-stakeholder integration. Other competencies, including normative competency, self-awareness, problem solving, and strategic and critical thinking showed a greater level of dispersion across different modules.

There is a need to further test the validity of both the proposed taxonomy and the results of the curriculum audit. The taxonomy was developed and the curriculum audit conducted

solely by the authors. Further consultation with academics and practitioners is required to accept the proposed framework as authoritative. As the curriculum audit exercise was based on a review of published module learning outcomes a further consultation exercise involving colleagues teaching those modules is required to verify the purpose and content of actual learning opportunities.

This leads to the potential of the SLO framework proposed here in informing future teaching, learning and assessment strategies. There is general consensus that sustainability education calls for pedagogic innovations that provide interactive, experiential, transformative and real-world learning (Blanco-Portela et al, 2017), which has led to the development of some pedagogic toolkits (see for example QAA, 2021; Blanco-Portela et al, 2017). However, only very few attempts have been made to link pedagogical approaches and competency development (Kioupi and Voulvoulis, 2020; Blanco-Portela et al, 2017).

As the curriculum audit tool being developed as part of this ongoing research systematically links SLOs to academic levels and modules, it provides an opportunity for the development of a learning diagnostic This diagnostic holds the potential to serve two purposes. It can inform learners' academic, professional and personal development planning by tracking their progress in attaining relevant knowledge, skills and attributes. Insights into this journey can, in turn, inform the enhancement of teaching, learning and assessment methodologies. As the model is generic, it can be applied across disciplines.

6. Conclusion

With reference to the UN SDGs, this paper has reflected on sustainability as an educational priority to inspire change in individuals, professions and organisations across the gastronomy as well as wider hospitality and tourism sector.

The QAA Education for Sustainable Development Guidance (QAA, 2021), Williamo et al's (2018) GHH model and Bloom's taxonomy of cognitive skills were used to develop a taxonomy of SLOs that can inform curriculum development at different academic levels. From this, a generic curriculum audit tool was developed and piloted. Findings suggest that Willliamo et al's (2018) hierarchy of generalism, holism and holarchism. presents a valid reference point for the development of progressive set of SLOs at different academic demand levels with generalist thinking being introduced at Level 4, holist thinking at Level 5 and holarchist perspectives introduced at Level 6.

More rigorous testing involving a larger range of stakeholders is needed to ascertain the validity of the proposed hierarchy. Once established, the framework can be used by learners for the purpose of self-assessment and by academics to inform the enhancement of learning, teaching and assessment strategies.

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