

A Business Studies Oriented Taxonomy for Assessing Viewpoint Change through Sustainability Education: Messages, Measures and Moves

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Abstract

This paper explores and deploys a business oriented taxonomy of decisions from which to ascertain change in student viewpoint regarding the study of sustainability modules. A review of conceptual and empirical studies to date on business cohorts' viewpoints regarding sustainability study notes the lack of business contextualization and the emphasis on the affective learning domain without sufficient focus on cognitive learning aspects. The paper then puts forward a taxonomy of decisions termed Messages, Measures and Moves charting progressive degrees of intrinsicity of business performance decision against which sustainability can be attached. With a questionnaire tool based on this taxonomy, primary research is undertaken with a small undergraduate business cohort both pre and post first sustainability module study. The authors acknowledge limitations regarding sample size, lack of cohort comparison/benchmarking and the module's elective status on the programme concerned. Nonetheless, the findings tentatively indicate sustainability module study to engender a degree of viewpoint change from business students in terms of movement/extension through the taxonomy putting sustainability into increasingly intrinsic business performance decisions. Further research is recommended including across multiple cohorts and on mandatory business sustainability modules – as well as invitation of further refinement of the business oriented taxonomy and questionnaire tool.

Keywords: Sustainability; business studies; transformative learning; cognitive/affective domain.

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Introduction

The significance of sustainability as a component in business management degree courses cannot be ignored. The survey of sustainability in business higher education by Christensen et al (2007) showed the topic already having high prevalence in course modules of leading institutions. In quality and regulatory terms the Association to Advance Collegiate Schools of Business (AACSB, 2016) specifics on business content for accreditation include sustainability, alongside social responsibility and ethical behaviour as elements which must be applied to approaches to management. In the UK, the Quality Assurance Agency (QAA) in its benchmarks has moved from depicting sustainability as one of several pervasive elements to consider for inclusion, QAA (2007), to distinctly specifying sustainability in the list of content essentials for business degree validation, QAA (2015).

Part of the success of Weybrecht's (2013) book, *The Sustainable MBA* is that it provides guidance on how sustainability can be applied within and across the functional areas of business management, i.e. marketing, finance, human resource management, operations and strategy, which of course constitute the curriculum/modular areas of the typical business management degree (masters or otherwise) programme. What is very apparent is that much of the practitioner experience based literature on teaching sustainability to business management cohorts refers to and revolves around changing existing student viewpoints and perspectives, seeing this as a key ingredient for the relevant learning to take place.

Stubbs and Cocklin (2008) see teaching sustainability to MBA business students as a process involving and requiring the shifting of mindsets. Starik, Rands, Marcus and Clark (2010) depict effective teaching of sustainability as signifying the end of 'business as usual' as far as management education is concerned.

The most recurrent viewpoint change notion for sustainability teaching in business is that of transformative learning (Thomas 2005; Rohweder 2007; Shrivastava 2010; Starik et al 2010; von der Heide and Lambertson 2011; Allevato 2016; Palma and Pedrozo 2016). Though more is said specifically about transformative learning later in this piece, it is clear that changes in business management student perspective are seen as crucial to, or consequent upon, successful learning with regard to sustainability. This study seeks to develop, put forward and deploy a particularly business oriented taxonomy of viewpoints and viewpoint change with regard to the importance of sustainability in students' minds, with deployment involving creation and use of a primary research tool with respondent options corresponding to positions in that taxonomy.

In terms of content coverage, this piece first goes on to undertake a critical review of existing depictions, in education literature, of the viewpoints and viewpoint changes required for sustainability learning. Alongside this there is critical examination of the efforts in studies to date to measure sustainability viewpoints of students and change thereof. In both respects, the studies examined chiefly come from business management education literature, though there is consideration of studies in other education fields – where it is felt there may be transferable contribution on the sustainability viewpoint depiction/measurement issue.

Following critical reflection on existing taxonomy depictions and measurement approaches, especially from the point of view of business management education relevance, this study introduces its own taxonomy of business student sustainability perspective – with fitness for purpose reasoning central to its justification. Empirical work on this taxonomy is then carried out with methodology centring on a primary research questionnaire tool/instrument distributed to a sample business management

cohort both immediately prior and immediately subsequent to study on a sustainability module. Presentation and reflection on findings represents assessment of usefulness of taxonomy and questionnaire tool and tentative exploration of the extent of relevant viewpoint change undergone with the participant cohort.

Literature Review

Analysis

In their powerful guest editorial piece in the *Academy of Management Learning and Education* journal, Starik et al (2010) call for sustainability learning to be transformative in management education, pointing to the impending nature of environmental crises with changes of approach on the part of upcoming business leaders needing to be profound and immediate. Interestingly also, they call for sustainability in business education to be no longer depicted merely as an ethical or regulatory cost factor but as something intrinsic and of positive impact, in organizations' strategy and performance. Rohweder (2007) depicts productive learning of sustainability in business schools as requiring a transformative learning method, portraying the process as one where changes in values and attitudes on the part of students as future business leaders are just as important as cognitive and informational learning of the subject matter. Evident here is the correspondence with the affective domain of learning as depicted by Krathwohl, Bloom and Bertram (1973). This form of transformative learning is put forward by Rohweder alongside adoption of a holistic approach whereby no prior assumptions about meaning and goals of sustainability in business are asserted but students are allowed to reach positions on these matters by themselves. Though openness and fluidity regarding perspectives is asserted as a key component, the numerous references to changes and shifts in values and attitudes in Rohweder's piece does clarify this to be a major aim of the process.

Though not explicitly focussed on values and attitudes, the shifting of mindsets that Stubbs and Cocklin (2008) see as crucial to teaching sustainability to MBA students does involve challenging and altering the prevailing world views of students (linked to the neoclassical economic paradigm) and developing in them the ability to think in new ways.

Shrivastava (2010) puts forward arguments to call for and justify an extension beyond cognitive learning to encompass physical and emotional learning in the teaching of sustainability in management studies. Asserting the transformative potential of such an approach, the chief argument is that effective sustainable management requires a passion for sustainability – of a sort which cannot be brought about by mere cognitive factual learning. Like Rohweder (2007), Shrivastava links this learning to a holistic pedagogy in which all domains of learning are integrated.

While Thomas' (2005) legitimacy centred investigation of transformative learning of sustainability in business is initially focussed on the cognitive standpoint, it is interesting that a great part of the discussion, and the focus of the instrument used for empirical work, is on attitudes of students and notions of the 'morally right' thing to do, especially with regard to societal and organizational norms. The same instrument is used by Ng and Burke (2010) when testing for business student predisposition toward sustainable business practices. Again interestingly, one of the main predictors/determinants of that predisposition is found to be students' scores on social values.

Though not used to measure change through time, the Reid, Petocz and Taylor (2009) empirical classification of qualitative interview responses from business students regarding viewpoints of sustainability, namely *Distance – Resources – Justice*, clearly again sees values orientation as a key component and indicator of full engagement.

Currently at the early phase of a longitudinal study, the work of Eagle, Low, Case and Vandommele (2015) with regard to sustainability and business students contains a cognitive element chiefly focussed on definition understanding/familiarity but for the most part concentrates on attitudes/values and behaviours, with an evident reported disconnect between the latter. It should also be recognised that the behaviours questions focus on respondents in their current citizen undergraduate state rather than asking the business students about sustainability related decisions/actions if they were leaders of an organization.

Looking at the undergraduate and post graduate business curriculum, von der Heidt and Lamberton's (2011) depiction of education for sustainability as being transformative does comprise cognitive progression elements including future oriented and critical thinking. Their depiction does however clearly extend into values education, in terms of addressing social justice and respect for nature and other people, and behaviours, in terms of promoting reflection on new lifestyles. It should also be noted that while their work is contextually set in the business curriculum, von der Heidt and Lamberton (2011) do see education for sustainability as being interdisciplinary.

In a study in which the primary research strongly features business students, Allevato (2016) asserts that transformative learning is crucial to education for sustainable development. Again such learning is linked to changed frames of reference of beliefs and values. Within an array of primary research tools, Allevato deploys the Revised New Ecological Paradigm Scale which, as acknowledged by authors, Dunlap et al (2000), investigates respondent values, including with regard to the perceived rights of humanity in relation to the natural environment.

In Palma and Pedrozo's (2016) analysis on sustainability learning in a postgraduate management course, transformative learning is portrayed as essential for organizational learning, and for the bulk of the developmental discussion in their piece, it is depicted in chiefly cognitive terms. As with Stubbs and Cocklin (2008), effective sustainability learning is linked to undergoing paradigm shifts and changed world views or ways of thinking. The cognitive aspect is taken further by coverage of the importance of metacognition and changed mental models. Having said this, the role of affective domain learning in the transformative aspect is shown firstly by reference to Sterling (2010) and seeing transformative sustainability learning in management as involving changed relational and ecological values and practices. The extent of the connection to affective domain learning however becomes most clear in the empirics of the Palma and Pedrozo (2016) piece. A strong focus on institutional values and senses of belonging is at the forefront of their evidence based case study organizational analysis.

In an analysis of sustainability in leadership development within management education, Muff (2013) directly links the requisite transformative learning to the affective domain. The vision for practice in the piece is based on explicitly normative assumptions about the need for change in business education. Further, transformative learning in leadership development is linked to learning involving the whole person, including mind, heart and body, while the goal/destination of responsible leadership is stated to require deeper empathy and a values based ethic. It should also be recognised in the Muff (2013) analysis, there is the view that ultimately the transformative learning in sustainability should be issue centred, rather than subject centred, and thereby trans-disciplinary.

Of significance here is the fact that the above reviewed depictions are very much consistent with presentations of transformative learning in the wider educational literature. Taylor's (2000) critical review of conceptual and empirical literature on the topic recognises affective and values based education as both a key component and a consequence of transformative learning.

It should also be noted that this linking of transformative learning of sustainability to movement in the values and attitudes, i.e. affective domain of learning, very much reaches beyond the business management subject field and has been applied to sustainability learning in higher education as a whole.

With particular reference to embedding sustainability in a cross-curricular and interdisciplinary way in HE institutions, Sipos, Battisti and Grimm (2008) see transformative learning as an engagement of head, hands and heart. In this way they advocate pursuit of cognitive, psychomotor and affective domains as an ongoing principle and criteria for constructing and balancing learning objectives. They see all curricular as essentially value laden and specifically that relevant values must be imparted to ensure a sustainable present and future. Like Rohweder (2007) they see transformative sustainability learning as requiring a preparedness to deconstruct and reconstruct all aspects of the learning experience.

Again, looking across the curricula, Shephard (2008) sees pursuit of affective outcomes as a key component in sustainability learning in HE that can bring meaningful transformation, both in institutions and in wider society. Explicitly linking to the work of Krathwohl et al (1973), Shephard connects affective learning to changes in values, attitudes and behaviours, and sees this as crucial for sustainability in higher education, because future graduates represent the bulk of the next generation's leaders, decision-makers and influencers in the economy and society. Also, the work of Shephard (2008), like Allevato, uses the Revised New Ecological Paradigm Scale tool.

Reflections and Ways Forward

Reflecting across these studies with criticality, it is viewed here that movement across/through from cognitive learning to affective learning should not be the chief focus when looking for pivotal sustainability viewpoint change in business students; the corollary of doing so would be to say that sustainability can only be effectively embedded when there is values change on the part of business students. It is argued here that the focus should more closely adhere to how students might link sustainability to improved performance/success of organizations. It is also argued here that within this objective motive field – there is still scope for refinement and distinction to make a more fit for purpose taxonomy which can capture important changes of viewpoint on the part of business students.

While embracing sustainability may quite readily be seen by students as a means of achieving indirect or extrinsic forms of business success, e.g. via improved public relations and ethical profile of the firm, it may require some sizeable cognitive viewpoint change for students to see sustainability as a means of achieving direct or intrinsic forms of business success, e.g. improved operational efficiency. Therefore, advocated here is a taxonomic approach charting out viewpoints of sustainability as more and less extrinsically/intrinsically valuable to business success.

In terms of correspondence to the studies reviewed, this taxonomic approach is essentially focussing on the pragmatic internal utility notion of sustainability's legitimacy as set down by Thomas (2005); the difference is that while the Thomas study looks to learning moving beyond this component for transformative legitimacy, this study seeks to unpick pragmatic internal utility into relatively intrinsic means of business gain, and relatively extrinsic means of business gain. In this study then, the 'transformative' aspect of sustainability learning in business would be extension from viewing sustainability as a chiefly extrinsic means of gain, to viewing it as both an intrinsic and extrinsic means of gain. It also links to Starik et al's (2010) desire for business students to see sustainability as a core positive impact on organizational performance. A final point in justification here is that increased ability to view sustainability as having a role

across a wider range of business decisions, is consistent with the idea of sustainability learning in business being both integrative and transformative in line with the notion of threshold concept criteria in curriculum design, as first depicted by Meyer and Land (2003).

Going into more detail the viewpoint depictions forming this taxonomy are set out as follows (hereafter termed the 3Ms):

Table 1:

Taxonomy of Sustainability's Perceived Role in Business Decisions/Activities

Description	Taxonomy Term.
Viewing sustainability as a valuable aspect to include in organization communications with (potential) customers, authorities/regulators and other stakeholders	<i>Messages</i>
Viewing sustainability as a valuable aspect to include when measuring and monitoring performance by the organization	<i>Measures</i>
Viewing sustainability as a valuable aspect to consider when making and carrying out operational and strategic decisions for the organization	<i>Moves</i>

It is understood that in practice these elements are likely to overlap. Sustainability reporting, e.g. via the Global Reporting Initiative, involves measurement but ultimately means that aspects of performance are communicated to outside bodies and thus constitutes important messages. Also, in so far as sustainability Key Performance Indicators (KPIs) are monitored they may inform, shape and revise future operational and strategic decisions, i.e. moves. Though this means that the 3Ms are not a wholly discrete taxonomy, recognition of the linkages through them can itself be seen as the business student reaching an advanced or cognitively matured position as far as sustainability engagement in business is concerned.

It is also recognised that changes in values and affective domain learning could conceivably be the cause of a student moving through the 3M viewpoints. This is not seen as a problem here. Capture of values change when it feeds through to business decisions is not seen as a flaw; focus wholly or chiefly on the affective domain when looking for impacts in the field of business decisions is seen here and argued above as a weakness.

Therefore primary research informed by this taxonomy is hereby taken forward.

Method

The questionnaire primary research tools are shown in Appendix 1 and 2. It was distributed to business student respondents immediately prior to study on a sustainability module and immediately following that study. More is said about data collection setting and cohort sample later.

The main question of the tool asks respondents about their intended business use of sustainability with thematic options pertaining directly to Messages, Measures and Moves. Within each of these thematic options there are gradation/extent options, *very little/ a reasonable extent/ a key aspect*.

An important point to note is that while the gradation/extent options are unidimensional in simple terms, i.e. greater/lesser, this may not be the case for the thematic options of the 3Ms. While intuitively and in line with the earlier discussion, the options, Messages, Measures and Moves do suggest greater and lesser degrees of intrinsicity of

sustainability's influence in business decision making – this is only indicative and may not apply in a linear way in the minds of respondents nor in the minds of business managers. In essence then, the differences between the 3Ms can only be deemed qualitative. As such, for the purposes of processing, analysis and presentation of data from this tool, statistical inference analysis of the answers thereof, e.g. Chi-Square for categorical data, is limited, tentative and conducted with caution.

Regarding the cohort of respondents, it is acknowledged here that the sample is small, commensurate with being a year group on a specific business course at a University Centre attached to a larger community college. Larger samples would be gained through business course year groups at a traditional or major city university and this is recommended. The students themselves were level 6/ finalist business degree undergraduates who had not studied a dedicated sustainability module prior to embarking on the module in question. In this sense, the pre and post experience questioning is authentic. Sources of bias and limitation may come through in that at level 6, the students have chosen the modules they are studying, including sustainability, as an elective. In this sense there may be greater pre-module inclination to see sustainability as of intrinsic benefit to business than with a cohort embarking on a mandatory sustainability module. Initial engagement with sustainability as a module of choice rather than as a compulsory module may indicate a greater a priori willingness on the part of respondents, to incorporate sustainability in all thematic forms of business decision making, i.e. across the 3Ms.

The second and final question on the questionnaire looks to capture the extent of student engagement with sustainability issues on other modules. This covers modules studied both prior to and parallel to the sustainability module. There is scope for slight variation on this across the cohort in that some level 5 modules are optional, and all level 6 modules are elective.

Further points of methodological significance include the fact that the sustainability module in question is a dedicated business degree module, carrying the title: Sustainability for Business. All willing and active participants (from both stages) from the business cohort are included in the study; no further sample selection methods, e.g. random/stratified were adopted with regard to cohort respondents. Salient ethical points include: as clarified in the ethical preamble at the top of the questionnaire, participation was optional, both at the points of questionnaire completion and in terms of subsequent right to withdraw. Anonymity and confidentiality were assured with the only identifying information being the student ID number – recorded in order to make pre-post comparison and change analysis more thorough e.g. to ensure only those participants active (completing the questionnaire) at start and end of module were included – and to enable student participant withdrawal. The module tutor was not involved in the research. Students were assured that the questionnaire and its pre-post module responses in no way represented assessment of themselves or of the teaching of the module tutor in question. Again, as noted in the stated preamble, completed questionnaires were stored securely with analysis not beginning until module studies were finished and module assessment scores were determined. The purpose of the questionnaire was conveyed as stated on the questionnaire preamble. In terms of formal approval, ethical review at the University Centre is conducted at the faculty level and business school ethical approval for this project and its publication has been confirmed by the business school ethics Chair.

One final limitation point is that despite the assurances, with the analysis being on only one cohort, one cannot fully separate effects of sustainability study as such, from the specific effects of the tutor – inspirational or otherwise. Because of this and other limitations, reflections on findings are appropriately tentative/indicative and recommendations for further research include advising multiple cohort analysis and thereby reaching some capacity for benchmarking of tutor effect.

Results

Presentation and Reporting of Findings

Reported here below with brief descriptive comments are the pre and post module responses for questionnaire question 1 regarding how sustainability would feature in various business decisions/activities if the respondent were a business manager/leader. Also present is the Chi Square statistic (to three decimal places) in each case, based on the test of the null hypothesis of no change, i.e. expected values of: post module response = pre module response. The Chi square statistic is thus constructed from the post module response deviations from pre module response value. Please note also that for this aspect: the gradated responses very little/ a reasonable extent/ a key aspect have been coded 1 - 2 - 3 respectively. Finally, while Chi Square is an essentially two tailed form of test, visual inspection of the figures shows direction of change being assessed.

If you were a business manager/leader, how would the sustainability issue factor in the following business activity?

Presentation of the organization's decisions and actions to stakeholders, authorities and other audiences. *Messages.*

Pre module responses:		Post module responses:	
Very little	0	Very little	1
A reasonable extent	3	A reasonable extent	1
A key aspect	12	A key aspect	13

Evident here is very small change in that the bulk of students in the sample already saw Sustainability as a key Messages aspect in business prior to studying the module - and that view held fast through the module. It is recalled that this is a sample of students all of whom had chosen Sustainability as a level 6/ finalist elective/option in their BA Business degree.

Chi Square = 3.167. Degrees of Freedom (DF) for each M question: (3 categories x 2 response points - 1) = 5. On *Messages*: The null hypothesis of no change through the module cannot be rejected at the 5% significance level.

If you were a business manager/leader, how would the sustainability issue factor in the following business activity?

Measuring and Monitoring Performance by the Organization. *Measures.*

Pre module responses:		Post module responses:	
Very little	6	Very little	0
A reasonable extent	4	A reasonable extent	7
A key aspect	5	A key aspect	8

Here, there is indicative evidence of sizeable change. Those who prior to the module thought sustainability would not feature in the Measures activities/decisions for a business, had abandoned that view subsequent to the module; further, there was a general shift of view towards giving sustainability a more significant role in the Measures decisions/activities in business organizations. Put another way – prior to the module there was a spread of views as to the extent sustainability should feature in organizational performance measuring/monitoring; greater proximity to consensus was evident after the module.

Chi Square = 13.000. DF = 5. On *Measures*: The null hypothesis of no change through the module can be rejected at the 5% significance level.

If you were a business manager/leader, how would the sustainability issue factor in the following business activity?

Making of Strategic and Operational Decisions for the Organization. *Moves*.

Pre module responses:		Post module responses:	
Very little	0	Very little	1
A reasonable extent	6	A reasonable extent	2
A key aspect	9	A key aspect	12

Interestingly, in this sample of business finalists who had chosen sustainability as an elective option, the bulk of them before the module gave at least a reasonable role for sustainability in operational and strategic decision making for organizations. There is tentative evidence that through the module, the issue made it more to the fore in the viewpoints of the student sample, but this is not conclusive.

Chi square = 2.833. DF = 5. On *Moves*: The null hypothesis of no change through the module cannot be rejected at the 5% significance level.

In Appendix 3 there is presentation of answers to Questionnaire Question 2 regarding engagement with sustainability in other module areas of business management studies. In terms of general comments on these at this stage the following can be said.

There is a big dispersion of answers across Not at all/Limited extent/Significantly for sustainability engagement across all the individual business management module areas, at both the pre Sustainability module stage and the post Sustainability module stage. Having said this there is a general increase in reported engagement of sustainability across all module areas post sustainability module relative to pre sustainability module.

With the sample evidence in hand, there is need to assess possibilities, or possible lines of reasoning, which may apply with regard to viewpoint change, learning and the 3Ms taxonomy as asserted.

Discussion

Discussion of Possibilities:

Small change in views – cognitive or affective – but practical Measures know-how gained. In this line of reasoning: The students already saw sustainability as crucial in business decisions/activities generally. Prior to the module, however, they lacked the practical knowledge for how to incorporate sustainability into measures of performance. This is plausible when one notes that even in the business sustainability literature there is criticism on applicability of the triple bottom line to organizations due to lack of unit commonality, e.g. Nemetz (2013). It is also plausible that through the module the students gained some know-how on including sustainability in performance measurement and monitoring; most business courses and texts do go through, however critically, the Global Reporting Initiative (GRI) and the International Organization for Standards (ISO) in terms of sustainability performance measurement and verification. On this reasoning it would follow therefore that with the students practically equipped, the Measures responses moved up to be more closely in line with those for Messages and Moves. While this does represent a degree of cognitive learning rather than values change; gaining some key tools to do a specific job with sustainability is not the same as undergoing cognitive change/learning regarding the purpose of sustainability in business management.

The Sequencing/Gradation of the Taxonomy needs changing i.e. from Messages-Measures-Moves to Messages-Moves-Measures. In this line of reasoning: An organization's strategic decisions are usually thought to be in the public domain. Believing this, students from the outset know that sustainability needs to feature in both Messages and Moves decisions for the firm to have a good profile. The intrinsicity of sustainability in business decision making is captured in how the organization measures success. The changes of respondent viewpoint on this theme show sustainability as featuring more centrally in the business bottom line for students post module. Reflecting here, in that the greater intrinsicity is linked to students, through the module, having a changed view on what constitutes business success, it is noted that there is as much ground for saying the change is affective and values orientated in terms of sustainability learning, as there is for saying it is cognitive.

Bunching Measures and Moves together, the Taxonomy roughly holds. In this line of reasoning, both before and after the module, Messages, in terms of presentation of information to stakeholder audiences, are seen by the bulk of the student respondents as important extrinsic 'profile' activities in which sustainability must factor. Also in this line of reasoning, through the module there has been a clear increase in the extent to which the student respondents see a role for sustainability in measuring/monitoring organizational performance, i.e. Measures, as well as in the extent to which those students see a central role for sustainability in making operational and strategic decisions, i.e. Moves – with both of these activities being seen, to varying degrees, as intrinsic to company performance beyond external profile. This view is tentatively reinforced by consideration of the other evidence. The broadly increased but still very dispersed reporting of sustainability coverage across the other mainstream business management modules indicates that several students – following sustainability study – perceived more greatly the role of sustainability across the other areas of business management. This too suggests sustainability to be an integrative and transformative concept in the business curriculum in line with the Threshold Concept criteria as set out by Meyer and Land (2003). An important point here is that this change can be seen as especially cognitive and not necessarily affective – and widens the range of business decisions for which sustainability can be expected to feature.

Conclusion

Conclusions and Recommendations:

Linking sustainability to different types of business decision/activity as a basis for assessing viewpoint change through teaching and learning is still maintained here as an important subject-tailored supplement to the use of values based tools in this regard. The evidence presented here, though mixed and tentative, does suggest that certain particular kinds of business decision/activity can, through specific teaching and learning, develop and incorporate a greater role for sustainability than would be the case without that learning.

Recommendations for further research include working with a larger sample cohort of business students, ideally a multiplicity of cohorts such that a degree of benchmarking and factoring out of teacher effect can be undertaken. Further, and crucially, undertaking primary research with business studies cohorts for whom the sustainability module is mandatory is strongly recommended. In addition, other classifications of business decision/activity may be applied, but it is advised that some unidimensionality, i.e. greater/lesser extent aspect, be adhered to, otherwise the results may be meaningless.

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Appendix 1

Hello. This questionnaire is part of our research into transformative/ change related learning of Sustainability in Business Studies. Should you choose to complete the questionnaire please answer the questions honestly and frankly. The same questions will be in a questionnaire for your attention immediately following your completion of the Sustainability module. Completed questionnaires will be stored securely and analysis will not begin until 15/07/2017. If you wish to withdraw your questionnaire(s) at any time, please contact woodwardr@grimsby.ac.uk quoting your student number. Thank you, Russ Woodward and Clare Hagerup.

Q1. Please rate how the sustainability issue would factor in the following business activities if you were a business manager/leader. (Circle the *s as appropriate)

	Very little	A reasonable extent	A key aspect.
Measuring and Monitoring Performance by the Organisation	*	*	*
Making of Strategic and Operational Decisions for the Organisation	*	*	*
Presentation of the Organisation's decisions and actions to stakeholders, authorities, customers and other audiences.	*	*	*

Q2. Have you engaged sustainability in any module areas of your business management studies up to this point?

	Not at all	Limited Extent	Significantly
Marketing Related Areas	*	*	*
HR/People Management Areas	*	*	*
Finance/Accounting Areas	*	*	*
Organisational Behaviour Areas	*	*	*
Economic/Political Environment Areas	*	*	*
Operations/Project Management Areas	*	*	*
Performance Measurement/Management Areas	*	*	*
Other: Please Specify.....	*	*	*

Student Number:..... **Date:**.....

Appendix 2

Hello. This questionnaire is part of our research into transformative/ change related learning of Sustainability in Business Studies. Should you choose to complete the questionnaire please answer the questions honestly and frankly. The same questions were in a questionnaire for your attention immediately prior to your start of the Sustainability module. Completed questionnaires will be stored securely and analysis will not begin until 15/07/2017. If you wish to withdraw your questionnaire(s) at any time, please contact woodwardr@grimsby.ac.uk quoting your student number.

Thank you, Russ Woodward and Clare Hagerup.

Q1. Please rate how the sustainability issue would factor in the following business activities if you were a business manager/leader. (Circle the *s as appropriate)

	Very little	A reasonable extent	A key aspect
Measuring and Monitoring Performance by the Organisation	*	*	*
Making of Strategic and Operational Decisions for the Organisation	*	*	*
Presentation of the Organisation's decisions and actions to stakeholders, authorities, customers and other audiences.	*	*	*

Q2. Have you engaged sustainability in any module areas of your business management studies up to this point?

	Not at all	Limited Extent	Significantly
Marketing Related Areas	*	*	*
HR/People Management Areas	*	*	*
Finance/Accounting Areas	*	*	*
Organisational Behaviour Areas	*	*	*
Economic/Political Environment Areas	*	*	*
Operations/Project Management Areas	*	*	*
Performance Measurement/Management Areas	*	*	*
Other: Please Specify.....	*	*	*

Student Number:..... **Date:**.....

Appendix 3

Presentation of Answers to Questionnaire Question 2 regarding engagement with sustainability in other module areas of business management studies:

Have you engaged sustainability in any marketing related module areas of your business management studies up to this point?

Pre Module Responses		Post Module Responses	
No answer	1	No answer	0
Not at all	4	Not at all	2
A limited extent	9	A limited extent	7
Significantly	0	Significantly	6

Have you engaged sustainability in any HR/people management related module areas of your business management studies up to this point?

Pre Module Responses		Post Module Responses	
No answer	0	No answer	1
Not at all	10	Not at all	3
A limited extent	2	A limited extent	6
Significantly	3	Significantly	5

Have you engaged sustainability in any finance/accounting related module areas of your business management studies up to this point?

Pre Module Responses		Post Module Responses	
No answer	1	No answer	1
Not at all	7	Not at all	4
A limited extent	5	A limited extent	6
Significantly	2	Significantly	4

Have you engaged sustainability in any organization behaviour related module areas of your business management studies up to this point?

Pre Module Responses		Post Module Responses	
No answer	0	No answer	1
Not at all	6	Not at all	2
A limited extent	7	A limited extent	4
Significantly	2	Significantly	7

Have you engaged sustainability in any economic/political environment related module areas of your business management studies up to this point?

Pre Module Responses		Post Module Responses	
No answer	0	No answer	0
Not at all	3	Not at all	0
A limited extent	6	A limited extent	5
Significantly	6	Significantly	10

Have you engaged sustainability in any operations/project management related module areas of your business management studies up to this point?

Pre Module Responses		Post Module Responses	
No answer	1	No answer	1
Not at all	4	Not at all	2
A limited extent	8	A limited extent	6
Significantly	2	Significantly	6

Have you engaged sustainability in any performance measurement/management related module areas of your business management studies up to this point?

Pre Module Responses		Post Module Responses	
No answer	0	No answer	1
Not at all	10	Not at all	2
A limited extent	3	A limited extent	7
Significantly	2	Significantly	4

Regarding 'other' module areas, no respondents specified a module so the evidence here is neither valid nor informative.