Enhancing Quality of Teaching in the Built Environment Higher Education, UK

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Abstract

Purpose – The issues in the current Built Environment Higher Education (BEHE) curricula recognise a critical need for enhancing the quality of teaching. This paper aims to identify the need for a best practice in teaching within Built Environment Higher Education (BEHE) curricula and recommend a set of drivers to enhance the current teaching practices in the Built Environment (BE) education. The study focused on section one of the National Student Survey (NSS) – Teaching on my course; with a core focus on improving student satisfaction, making the subject interesting, creating an intellectually stimulating environment, and challenging learners.

Methodology- The research method used in this study is the mixed method, 1.) A document analysis consisting of feedback from undergraduate students, and 2.) A closed-ended questionnaire to the academics in the BEHE context. More than 375 student feedback were analysed to understand the teaching practices in BE and fed forward to developing the closed-ended questionnaire for 23 academics, including a Head of school, a Principal lecturer, Subject leads and lecturers. The data was collected from Architecture, Construction Management, Civil Engineering, Quantity Surveying, and Building surveying disciplines representing BE context. The data obtained from both instruments were analysed with content analysis to develop 24 drivers to enhance quality of teaching. These drivers were then modelled using the Interpretive Structural Modelling (ISM) method to identify their correlation and criticality to NSS section one themes.

Findings – The study revealed 10 independent, 11 dependent and 3 autonomous drivers, facilitating the best teaching practices in BEHE. The study further recommends that the drivers be implemented as illustrated in the level partitioning diagrams under each NSS section one to enhance the quality of teaching in BEHE.

Practical implications: The recommended set of drivers and the level partitioning can be set as a guideline for academics and other academic institutions to enhance quality of teaching. This could be further used to improve student satisfaction and overall NSS results to increase the rankings of academic institutions.

Originality/Value: New knowledge can be recognised with the ISM analysis and level partitioning diagrams of the recommended drivers to assist academics and academic institutions in developing quality of teaching.

Keywords *– Enhancing Teaching Quality, Built Environment Higher Education, Learning in post-COVID, National Student Survey (NSS), Teaching on my course.*

Introduction

The United Kingdom's Higher Education (HE) sector is focused on improving the quality of teaching (Santos et al., 2020; Tsiligiris and Hill, 2019; Matthews and Kotzee, 2019). HE providers continuously attempt to enhance learning standards by assuring teaching developments within courses. Hence, knowledge providers make considerable efforts to develop pedagogy within BE academia (Van Schaik et al., 2019). However, developing teaching within a discipline-specific is challenging (Ovbiagbonhia et al., 2020; McKnight et al., 2016). Moreover, Tsiligiris and Hill (2019) and Welzant (2015) noticed an eminent knowledge gap in enhancing quality within the current HE curricula. The global COVID pandemic has exacerbated the challenges related to teaching and learning within higher education (Allen et al., 2020). Both the learners and academics face challenges in maintaining quality in HE, especially within the current focus on digitised and Virtual Learning Environment (VLE) teaching (Arora and Srinivasan, 2020; Bao, 2020). This study explores best practices to improve the quality of teaching across the Built Environment Higher Education (BEHE). Thus, the study investigates section one in NSS questions, namely "The Teaching on my Course". The main emphasis is given to four central themes within the NSS section one of the questionnaires reflects on whether "the staff is good at explaining things", "made the subject interesting", how "the course is intellectually stimulating", and "how the course has challenged students to achieve the best work". Many contemporary learning and teaching strategies are present in curriculum development (Tsiligiris and Hill, 2019). However, a significant knowledge gap is present in identifying the best use of each theme under NSS Section one and developing a best practice to enhance quality of teaching. The data obtained by section one of NSS in 2019, 2020 and 2021 highlights the need to enhance teaching in the BE curricula. NSS records that the satisfaction level has reduced by 6% in the average minimum scoring criteria of "teaching in my course" in 2021 (Office for Students, 2020). It further identifies that the average percentile of NSS section one of 2021 was 84% for all subjects, whereas BE scored only 79%. This score provides insight into how BE performs compared to other subjects within the UK's HE context. Issues in teaching and the COVID pandemic may have influenced the significant reduction in NSS score (Arora and Srinivasan, 2020; Allen et al., 2020). Therefore, this study aims to identify best practices and enhance the quality of teaching in BEHE.

1.0 Literature Review

1.1 Explaining the subject

Increasing understanding in an area of expertise is vital in providing pedagogical education. Literature (Ferguson, 2012) suggests that teaching helps identify cognition within human behaviour and gain insight into relevant information while relating to exposure and experience within the subject area within various levels of learning. The levels of learning lead to further considerations of self-academic development in students. Findings from Gollub (2002) suggest that a better understanding of learning is facilitated around the concepts and principles of the subject matter. Moreover, Andersson et al. (2013) highlight that the students tend to generate more knowledge by acquiring prerequisite knowledge and utilising them to increase their understanding of the subject. In addition, Andersson et al. (2013) suggest that learners embrace prior learning to understand interactive learning better. However, in a classroom context, the multi-disciplinary orientation of BE makes it challenging to address prerequisite knowledge and provide in-depth understanding to learners (Waheed et al., 2020; Dieh et al., 2015). Thus, BE academics need to devise module delivery aligning to the subject area while reflecting previous knowledge in enhancing knowledge.

Moreover, Lai (2011) and McKnight et al. (2016) stressed the importance of interactive learning within pedagogical education. These studies highlight that learners find that knowledge is constructive when peer-reviewed; thus, providing a better environment to embrace enhanced knowledge of BE understanding is essential. Moreover, Guo and Shi (2014) further explain the uses of collaboration which increases understanding using active strategies. However, Guo and Shi (2014) overlook that innovation embedded in learning effectively brings collaboration and utilises modern approaches within the classroom context. Furthermore, the current pandemic has encouraged active strategies such as blended learning and digitised technologies (Allen et al., 2020) within a VLE. However, challenges were identified in the definitive use of VLE, which did not advocate sub-teaching concepts such as interactive learning and context-based knowledge (Waheed et al., 2020). The "silent" classrooms are not appropriate for the transfer and sharing of technical knowledge in BEHE. Ultimately, the prospect of teaching signifies innovative approaches and the extent of using VLEs (Virtual Learning Environment)' to make a subject interesting to foster interactive learning through the co-creation of knowledge to promote a clear explanation of a BE subject.

1.2 Making the Subject Interesting

The students do not engage in situations where they will no longer see value or interest in the content taught (Fraser 2019). Lozano et al. (2012) state that analytical competency is achieved using theory taught relevant to industrial capacity, creating a platform for students to participate in learner engagement. Both Fraser (2019) and Lozano et al. (2012) suggest that collaboration between academics and learner is significant to active learner engagement in developing interest in subjects learnt. Therefore, engagement and collaboration are considered the most critical challenges in an active learning environment (Hue and Li 2008 and Scott 2020). However, a knowledge gap exists in measuring collaboration that shows competitive learning and the cooperation of learners with the academic. The social, psychological, and academic characteristics build learners' perception of collaborative work (Uchiyama and Radin, 2008). Out of the above, Hmelo-Silver et al. (2008) established the importance of the social entity of collaboration. That suggests associating the benefits of social support by establishing a positive atmosphere within collaborative learning. Also, implementing a collaborative approach to learning enhances diversity within the BEHE.

Furthermore, engagement benefits the learners' psychological aspects, reflecting on academic performance and mental well-being (Clough and Strycharczyk 2012). It signifies student-centric education reflecting on the psychological characteristic of developing students' self-esteem, thus increasing interest in the subject. Secondary elements in BE teaching, such as site visits, guest lectures and other innovative concepts, could be denoted as examples (Van Schaik, 2019). Although Clough and Strycharczyk (2012) consider psychological characteristics, the study does not signify the prominence of critical thinking obtained from collaboration. Bye, et al. (2007) imply that critical thinking is needed to make content more meaningful and collaborative. However, collaborative teaching methods have been limited in considering teaching during the COVID pandemic (Blundell et al., 2020); thus, more research is needed to identify the means of developing learner engagement in VLEs. In addition, this study identifies learner engagement and fostering collaboration demands stimulating learners and making the subject interesting. However, a significant knowledge gap exists in addressing the findings to make a subject interesting in the current BEHE context.

1.3 Intellectual stimulation of learners

Studies identify that learners become stimulated when the subject is interesting and motivated to overcome the challenging nature of the course structure (Bolkan and Goodboy, 2010). Moreover, student motivation and intellectual stimulation increase when subject matter reflects learner interests (Baeten et al., 2010). Furthermore, intellectual stimulation improves when academics provide authentic, current, industry-related practices relevant to learners' academic learning. Bolkan et al. (2011) suggested implementing active learning to enhance learners' intellectual effort. Thus, intellectual stimulation needs to be integrated through problem-solving teaching methods, context-based learning, realistic case studies and setting clear expectations and motivation for student excellence.

Chickering and Gamson (1999) suggested that summarising ideas, reviewing problems, assessing the level of understanding and concluding on learning outcomes at the end of a learning session stimulates learners. Furthermore, Tirrell and Quick (2012) outlined opportunities to direct learners by contrasting fundamental theories and applying theory to real life. However, the researchers overlook the fact that stimulation could be provided outside the learning environment. The current practice within BE academia involves guest lectures and arranging site visits to explain the classroom bandwidth and stimulate learners (Chen and Yang, 2019). Furthermore, Educational Development Association (2013) signifies the influence of Professional Standards and Regulatory Bodies (PSRBs) within BE learning. The use of PSRBs deems the guarantee in using industry-appropriate knowledge delivered. In addition to making the subject interesting, PSRBs would further stimulate the learner to develop academic skills and competencies. Thus, the learners tend to foresee the industry-standard reflecting the theories, advocating intellectual stimulation. Nonetheless, these strategies are disrupted by the COVID pandemic's current measures for virtual module delivery (Allen et al., 2020). Thus, the use of the strategies was to be integrated into digitisation platforms and integrated with the VLE teaching methods. In contrast, a measure of best practice is eminent in contemplating using VLE platforms' strategies in addressing the COVID situation and further development in the BEHE curriculum.

The stimulation provided at the elementary level in BE learning is vital for interaction between the learners (Jabar and Albion 2016). The collaboration between learners and knowledge providers is vital for intellectual stimulation, and the use of concepts such as VLE further promotes stimulation (Block, 2018; Marshalsey and Madeleine, 2018). However, identifying fundamental digitisation approaches and innovative teaching methods such as

blended learning or flipped classroom will signify the commitment toward stimulated learning. Stimulation through quizzes and experimental studies will improve the clarity of knowledge provided through VLE. In addition, stimulation in a VLE through various digital learning strategies for students can promote challenging learners. However, some views on the current teaching practices in the COVID era denote that VLE is not the perfect solution for academic development (Bao, 2020). Academics need to know to what extent VLE should be integrated and how the best practice in BE teaching should be developed.

1.4 Challenging Learners

Knowledge providers who promote intellectual stimulation create a challenging learning environment that empowers the learners and promotes cognitive and affective learning (Bolkan and Goodboy, 2010). Kohn Rådberg et al. (2018) discuss that intellectual stimulation depends on the intrinsic motivation to be challenged in critical learning contexts. Thus, the learners require encouragement in identifying intellectual stimulus in acknowledging the knowledge gained in HE curricula. Altomonte et al. (2016) explain how learners persist in their learning process much longer in a challenging environment than in a traditional learning environment. A plethora of more contemporary literature (Avargil et al., 2011; Chen and Yang, 2019) addresses specific learning strategies such as project-based and context-based learning, which acts as a stimulus in developing challenging environments in the current BE learning context.

A study carried out by Han and Ellis (2019) has detailed revelation on in-depth learning approaches to learning and 'higher learning outcomes'. However, it fails to identify the relationship between challenging learners and their impact on academic and cognitive learning strategies. Learners often respond more to challenges made via competitive elements such as quizzes, polls, and other simpler assessments in module delivery (Chen and Yang, 2019). It is vital to understand that a challenging learning environment is not a mere self-testing method for assessment in curricula but rather an instrument for continuous academic improvement (Darling-Hammond et al., 2019). Further, learners will benefit from self-preparing concerning the knowledge content discussed in the classroom. It further influences advanced knowledge gained through research rather than knowledge transmission provided in the classroom.

Challenging learners create more opportunities to collaborate and increase intellectual stimulation (Boud et al., 2018; Gomis et al., 2021). However, Boud overlooks counter motivation created by learners in challenging, which results in innovation. Furthermore, challenging students could be identified to apprehend stimulation and provide informative judgment on their academic experience. By challenging the learner, the academic could evaluate the aptitude and growth (Hamari et al., 2016). The current practice in academia during the COVID pandemic deemed the use of VLE in setting out quizzes and other evaluation methods to stimulate and challenge learners (Block, 2018; Bao, 2020). Hence, using digitised platforms in an active learning environment is paramount in advancing teaching in BE. However, these VLE instruments could be further integrated with the module delivery plan to optimise challenging learners and enhance academic development.

2.0 Methodology

2.1 Participants & Materials

'Teaching on my course' of the NSS questionnaire emphasises four questions related to 'explain things, make the subject interesting, create an intellectually stimulating environment, and challenge the learners'. Documental analysis and questionnaire surveys with

separate samples were identified as the potential research tools optimal for the study. Document analysis is adopted to analyse a sample of 375 Mid-Module Reviews (MMR) from the students from level three to level six in contemplating the finding from literature focusing on the four questions in NSS section one. The documental data were categorised into themes where students identified how the teaching helped them establish the key elements that were positive about the module. This analysis uses 375 samples, assuming the confidence level of 95% and the margin of error at 5%.

The themes identified from the documental analysis were used to identify and develop the survey framework and questionnaire conducted for the academics. The closed-ended questionnaire survey refined the documental data findings and established the gap between the existing and best practices. Departments of Architecture, Construction Management, Civil Engineering, Quantity Surveying, and Building surveying were selected to represent the BE discipline to obtain validated and reliable data making the survey sample 20 academics. Four sets of academics were selected under each discipline based on their title, including a Professor/Reader, two Senior Lecturers and a Lecturer from each BE discipline. This approach helped to recruit four participants from each discipline in BE. Additionally, three participants, a Head of the school, a Principal lecturer, and a Subject lead, were included, bringing the sample size to 23 participants. A critical focus of the latter three participants was to eliminate unconscious bias in feedback received from students and endorse validity, reliability and transferability of the data collected and modelled through ISM analysis. The data obtained from the questionnaire assisted in developing the drivers in enhancing the best practice of teaching in the BEHE context.

2.2 Research Procedure

A systematic approach to data collection incorporating the literature review, document analysis, and questionnaire survey has allowed an in-depth understanding of current BEHE teaching and learning. The substantial data collected from documental analysis and questionnaire survey needed to be correlated with the NSS theme establishing relationships on improving BEHE teaching and learning. Thus, the data was modelled using the Interpretive Structural Modelling (ISM) tool to find critical drivers and correlation of each driver to the theme of NSS section one. The drivers identified through the data analysis were used in the ISM analysis. Afterwards, a reachability matrix was developed from modelling the drivers through a “Structural Self-interaction Matrix” (SSIM). A “Matrice d’Impacts Croises-Multiplication Appliqúe a Classement” (MICMAC) was further developed to identify what factors need to be emphasised in enhancing teaching strategies ascertaining the degree of the relationships between the drivers found through SSIM. The MICMAC enabled categorising data obtained into independent, dependent and autonomous clusters to establish a best practice framework for teaching enhancement in BEHE. The data derived from each analysis was factored in when developing the level partitioning of each driver. Moreover, the ISM level partitioning illustrated a critical correlation of each driver under NSS themes and emphasised implications in the BEHE context. Finally, this study's general conclusions are drawn from the level partitioning and presented as the recommended strategies for developing teaching enhancement in BEHE.

3.0 Analysis

Three Hundred and seventy-five (375) MMRs (Mid Module Reviews) were examined. Students were given three questions; how the module is undergoing; what is good/bad, and suggestions to improve module delivery. A subjective evaluation by academics was made of the reviews provided, and themes were identified in the given student suggestions. This

evaluation identifies 24 drivers directly influencing the teaching practices highlighted by the four NSS questions. The identified drivers were collated and categorised into the specific NSS questions/themes, and an ISM analysis was carried out. A pair-wise relationship is mapped to the Structural self-interaction matrix (SSIM) using a binary matrix based on the above data gathered through the closed-ended questionnaire survey from the teaching staff. The binary matrix was used to create the MICMAC graph in recognising the influential drivers that enhance HE teaching. Furthermore, a level partitioning was carried out to find the inter-relationship of each driver and recognise the sequential order of implications within the BEHE context. Based on the characteristics of the independent cluster, these drivers are considered fundamental to the system. These drivers are considered incredibly important for enhancing teaching in BEHE. The drivers based on the characteristics of the dependent cluster are considered a necessity for accommodating the independent drivers. Thus, dependant drivers directly influence the planning and module development rather than being fundamental to teaching. The drivers based on the characteristics of the autonomous cluster are considered fundamental unimportant in the system.

The study reveals that critical emphasis needs to be given to promote active learning and provide in-depth understanding when the academic explains module content. Promoting collaboration, student engagement and focussing on student-centric approaches occurred in the independent cluster to make the subject interesting. Promoting intellectual stimulation by enhancing interaction between the learner and the academic was considered fundamental in enhancing active learner stimulation. Challenging the learner by providing motivation, promoting self-assessment for continuous improvement, challenging learning culture through learner motivation and helping the learner develop an action plan on career progression was illustrated in the independent cluster making the drivers deemed fundamental. Thus, implementing these drivers would facilitate the best practice in HE teaching.

Furthermore, dependent drivers identified through the study will be beneficial in facilitating the independent drivers mentioned above. An interim assessment opportunity and guidance given through a formative feedback session were recognised as dependent drivers in explaining the module content. Use of various media in explaining the subject content, executing cognitive approaches, arranging site visits (where applicable) or site walk-throughs, guest lecturers, augmentation in lecture material, and presenting real-world examples in lectures were identified as dependent drivers in making the subject interesting. Intellectual stimulation by challenging learners in problem-based learning and assessment guidance through assessment rubrics and question-based learning were identified under the dependent cluster. Contrary to widespread belief, revisiting previous knowledge and reflecting on module content with the pathway provided by PSRB in explaining module content and reflecting more on the industry-led practices in intellectually stimulating students were in the autonomous cluster. However, this is not because the said drivers have little influence on the system, but the drivers are facilitated by other (both dependent in independent) drivers.

To generalise the critical findings from the MICMAC analysis, the following Table 1 illustrates the fundamental drivers (independent), facilitating drivers (dependent), and non-influential/already accommodated drivers (autonomous) in enhancing teaching in HE. The drivers are categorised into the four performance indicators depicted by Section 1 of the NSS to clarify and ease interpretation. Thus, academics and academic institutions can implement these drivers to promote teaching practices within BEHE.

Table 1: Categorisation of Drivers

Section 1: The teaching on my course				
NSS Section	**Drivers identified through the study**	**SISM Co-ordinates (I,j)**		**MICMAC Categorisation**
Q1 – Staff is good at explaining things.	D1 - Promoting active learning	10	17	Independent
	D2 - Providing an in-depth understanding	2	24	Independent
	D3 - Revisiting previous knowledge.	11	6	Autonomous
	D4 - Interim assessment opportunity.	13	6	Dependent
	D5 - Guidance given through formative feedback session.	13	10	Dependent
	D6 - Reflecting module content with the pathway provided by PSRB.	10	10	Autonomous
Q2 – Staff have made the subject interesting.	D7 - Promoting collaboration	7	13	Independent
	D8 - Focussing on student-centric approaches.	6	21	Independent
	D9 - Promoting student engagement.	10	14	Independent
	D10 - Use of a variety of media in explaining the subject content.	15	5	Dependent
	D11 - Executing cognitive approaches.	15	11	Dependent
	D12 - Arranging site visits (where applicable) or site walk-throughs.	18	4	Dependent
	D13 - Guest lecturers	17	4	Dependent
	D14 - Augmentation in lecture material	18	2	Dependent
	D15 - Presenting real-world examples in lectures.	19	4	Dependent
Q3 – The course is intellectually stimulating.	D16 - Promoting intellectual stimulation.	9	19	Independent
	D17 - Enhance interaction between the learner and the academic.	8	15	Independent
	D18 - Reflecting more on industry-led practices.	11	9	Autonomous
	D19 - Challenging learners in problem-based learning.	13	11	Dependent
Q4 – My course has challenged me to achieve my best work.	D20 - Promoting self-assessment for continuous improvement.	9	13	Independent
	D21 - Challenging learning culture through learner motivation.	7	19	Independent
	D22 - Assessment guidance through assessment rubrics.	12	6	Dependent
	D23 - Question-based learning.	16	11	Dependent
	D24 - Having an action plan on career progression.	5	20	Independent

4.0 Discussion and Recommendations

This study recognises the significant need to enhance quality of teaching in BEHE. Both the literature and primary data collection recognised a substantial number of suggestions for enhancing teaching practices. The strategies/drivers obtained from primary and secondary data are categorised into themes and analysed according to their influence/driver capability with questions put forth by NSS section 1. The outcome of the discussion will be the level partitioning of the identified drivers, which will illustrate the accurate implementation in increasing quality of HE teaching. The below section further finds the identified drivers and their correspondence with the NSS themes under section one.

3.1 Explaining the subject

The root of explaining the subject depends on how the learner clarifies the knowledge criteria. Gollub (2002), Ferguson (2012), and McKnight et al. (2016) prove that active learning is highly dependent on the levels of understanding. Providing a higher understanding of the subject matter, the context of knowledge transferred, revisiting the experience learnt and promoting interactive learning are critical academic performance enhancers (McKnight et al., 2016; Guo and Shi, 2014; Eames and Birdsall, 2019). The level partitioning developed from the research findings shown in figure 1 below identifies that revisiting knowledge (D3) and reflecting on the (D6) PSRB pathway was the least priority at level III. Even though they are at level III, they will aid other drivers with in-depth understanding (D2) to better explain module content. Both literature (Lozano et al., 2012; Ovbiagbonhia et al., 2020) and data state that the module leader needs to identify how to merge academic and professional competency gaps in providing an in-depth understanding of BE curricula. However, the research findings highlight the importance of the availability of interim assessment guidance. The use of interim assessment opportunities (D4) and guidance given through formative feedback (D5) should be considered significant in developing the module. Emphasis is on module leaders, and academics need to develop and deliver the module content facilitating formative assessment/feedback. The study identifies that promoting active learning and in-depth understanding is fundamental and at Level I in enhancing knowledge delivery. The current studies (Allen et al., 2020) as pedagogic theories and platforms such as VLE in promoting active learning by using quizzes and other media to engage students have deemed the best strategies in enhancing active learning.

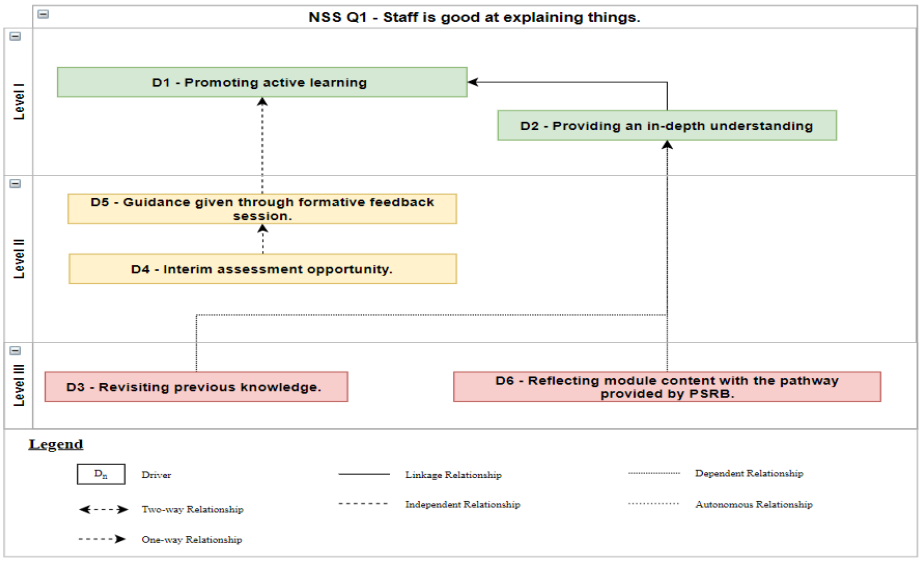

Figure 1: Level partitioning of Drivers on NSS Q1 - Staff is good at explaining the subject

3.2 Making the subject interesting

The literature establishes that the learning culture of the modern-day classroom has evolved. Hue and Li (2008) and Hmelo-Silver et al. (2008) identified the core context of collaboration and its' effect on subject engagement. The widespread belief that the current pedagogical paradigm on digitised practices promotes collaborations (Siew, 2018; Hamari et al., 2016) influences authentic, industry-related content, especially within the BE curricula. Moreover, the literature review identifies that BE knowledge providers promote digitised learning concepts in HE. Findings from primary data also recognise approaches in accommodating augmented concepts and focusing on digitised learning environments facilitating such learning. The level partitioning developed from the research findings shown in figure 2 below illustrates both facilitating drivers and fundamental drivers. The facilitating drivers are: execute cognitive approaches (D11), arrange site visits or site walk-throughs (D12), guest lecturers (D13), augmentation/digitisation in lecture material (D14), and present real-world examples in lectures (D15). Since these drivers are positioned at level II, these drivers (D10 to D15) are considered to facilitate module delivery's fundamental drivers. However, it is identified that D13, D10 and D14 facilitate each other and help facilitate D11 and D15, which facilitate D7 and D9, respectively. The study further strengthens the argument that promoting student collaborations (D7), engagement (D9) and focussing on student-centric approaches (D8) are fundamental in making the subject content interesting. It further revealed that both D7 and D9 facilitated D8 in making the subject interesting. The ISM level partitioning positioned them at Level I due to their fundamental influence in making the subject interesting.

A critical finding from the study is that using a variety of media (D10) to explain the subject brings innovation to the classroom. The research findings signify that digitisation must be considered a key facilitator but not a fundamental element in pedagogic development. Further to the evidence of earlier studies, blended learning and flipped classroom techniques are considered paramount in carrying out collaborative knowledge in group learning (Allen et al., 2020). Documental analysis insists on combining traditional and digitised media to deliver module content. Findings from documental analysis reveal that students prefer traditional module delivery aligning with digitised recordings for revisiting knowledge. Thus, digitisation needs to be a facilitator rather than being promoted to a fundamental driver in teaching HE. It is further applicable to the current COVID learning context, where online learning has dominated pedagogical implementation (Bao, 2020). This study presents critical evidence that digitisation is not the case in enhancing teaching practices but rather an opportunity to facilitate independent drivers in enhancing HE learning.

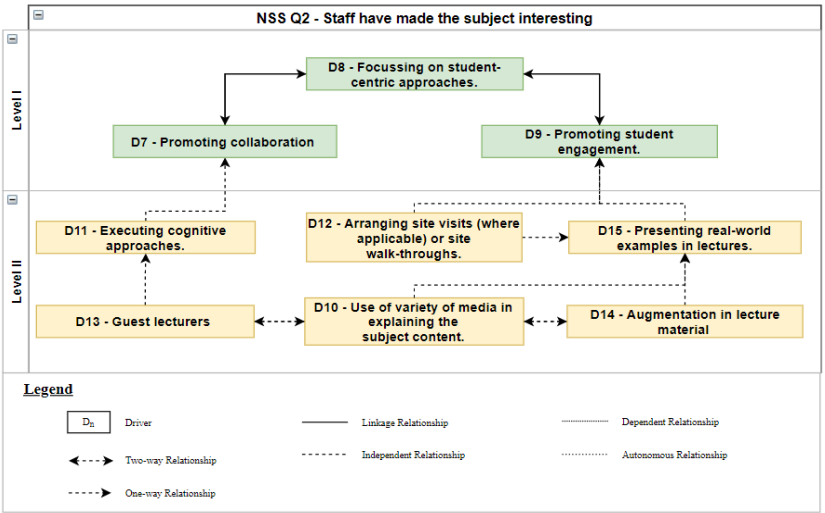

Figure 2: Level partitioning of Drivers on NSS Q2 - Staff have made the subject interesting

3.3 Intellectual stimulation of learners

Baeten et al. (2010), Bolkan et al. (2011), and Jabar and Albion (2016) identify that intellectual stimulation critical in HE student progression. Both literature by Baeten et al. (2010) and Bolkan et al. (2011) and research findings reveal that a straightforward 'lecturing' where the knowledge is being pushed to the learner with less reflection and context is considered adverse to academic progress and performance. Data and literature (Van Schaik, 2019) disagree with adopting industry-led practices (D18) to deliver the module content, thus, positioning it at Level III. findings reveal that this is due to drivers such as site visits, guest lectures, and focusing on real-world context were already adhered to make the subject interesting. However, these drivers are prominent in challenging learners by using problem-based (D19) and industry-led contexts in learning. Tirrell and Quick (2012) and Jabar and Albion (2016) further emphasised innovative teaching and effective teaching methods, such as problem-based learning (D19). However, the research findings emphasise that such practice is not fundamental but crucial in increasing intellectual stimulation since it is positioned at Level II in ISM level partitioning. However, it recognises the influence of D19 in facilitating both D16 and D17. The study emphasises intellectual stimulation (D16) in module development and that enhancing learner-academic interaction (D17) is fundamental and is self-facilitating to make the course intellectually stimulating. The ISM level partitioning has positioned them in Level I, which denotes fundamental influence over intellectual stimulation. The findings further show the benefits of utilising digitised tools or in-class activities to promote intellectual stimulus, especially within the COVID pandemic (Arora and Srinivasan 2020) and for disciplines such as BE, where a vast knowledge content (e.g. architectural, engineering, surveying and management) needs to be reflected.

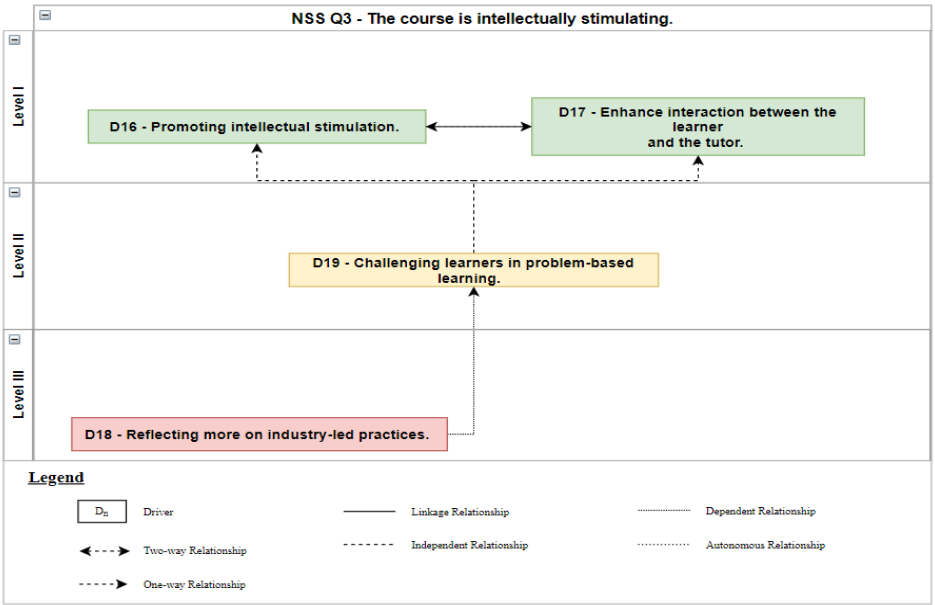

Figure 3: Level partitioning of Drivers on NSS Q3 - The course is intellectually stimulating

3.4 Challenging Learners

The literature review (Darling-Hammond et al., 2019 and Boud et al., 2018) identifies those challenging students could increase the probability of academic progression. However, Kohn Rådberg et al. (2018) stressed the deficiencies in academic progression regarding the lack of motivation and drivers, which does not aid intellectual stimulation. The literature provides many strategies for promoting a challenging culture within the learning environment; however, the surplus of theories makes the implementation complicated and time-consuming (Boud et al., 2018; Bolkan, 2010). Assessment guidance through assessment rubrics (D22) and question-based learning (D23) are at Level II at ISM Level portioning. Contradicting the literature (Ellis and Hogard, 2018), the research findings illustrate that D22 and D23 were not fundamental to challenging students but influential in facilitating D21 in enabling students to achieve their best work. Also, this could be due to digitalisation being a prominent aspect in enabling these drivers into the HE curriculum. This study identifies that the fundamental drivers as promoting self-assessment opportunities (D20), motivating the student through a challenging culture of knowledge provision (D21), and developing an action plan on career progression/continuous improvement (D24) is positioned at Level I in ISM analysis. It further highlights that D21 and D24 facilitate D20, promoting continuous student improvement. Thus, the analysis deems that the module leader/lead academic needs to consider the self-assessment techniques, challenging learning culture, and action plan for career development in developing the module and enhancing teaching in HE.

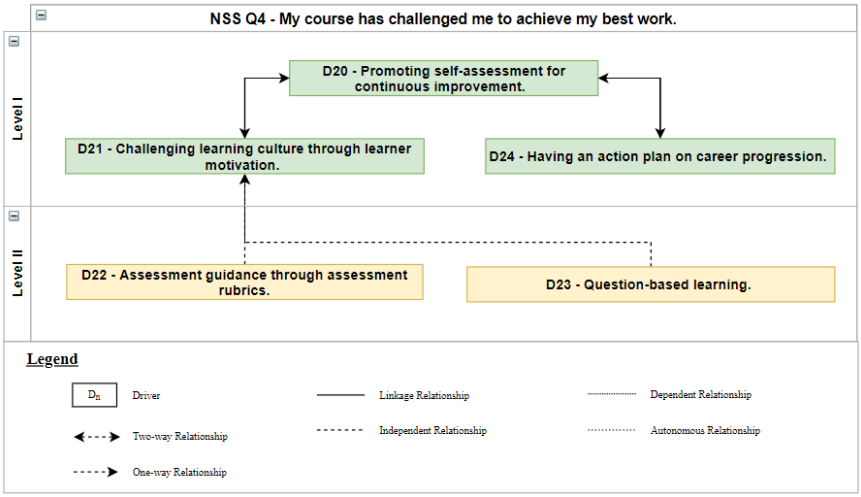

Figure 4: Level partitioning of Drivers on NSS Q4 - Course has challenged to achieve the best work

6.0 Conclusions

This study establishes drivers to enhance the quality of teaching in BEHE across the range of students that reflects on the results of section 1 of NSS. The findings are novel as the study discusses drivers and illustrates implementation to improve quality of teaching within the four NSS themes. The main findings from the literature review set up a significant room for improvement in teaching and pedagogy to enhance student performance in BEHE. The practical implications of this study are that the identified drivers could help academics and students increase understanding in conjunction with the lectures that deliver in-depth knowledge through practical sessions. As illustrated in the figures, the level partitioning will enable academics to focus on significant pedagogical themes and enforce strategies. As the theme refers to the NSS guidelines, the drivers developed could assist HE institutions in

obtaining better results for the NSS survey. Finally, the combined set of figures could form a framework for enhancing quality of teaching within HE curricula.

The suggestions for student engagement, developing a stimulating learning environment, and challenging students need various collaborative online and face-to-face teaching approaches. The literature set up another critical part in providing context on module background and content. Drivers further reinforced that promoting active learning and in-depth understanding was fundamental in improving teaching in the BEHE context. Moreover, the study's primary data proved that teaching and learning, resources, standards, and assessments could provide a better understanding to students and could be further facilitated by the above-mentioned independent drivers.

This interpretation contrasts that implementing innovative practices in knowledge transfer such as blended learning, flipped classroom and group learning are vital for stimulating learners. Promoting collaboration, student engagement, and focusing on student-centric approaches were considered independent, but these drivers facilitate other drivers in making the subject interesting. Moreover, promoting intellectual stimulation, enhancing interaction between the learner and the academic, promoting self-assessment for continuous improvement, challenging learning culture through learner motivation, and having an action plan on career progression are recognised as independent drivers in advancing teaching in BEHE.

The study identified several dependent factors, such as aligning the module content with the PSRB requirements and emphasising personal and career development benefits. However, the current learning practices need to be integrated with the online delivery platforms to provide knowledge and challenge learners for better learning practice. Enforcing quizzes and real-world examples through a digital platform proves vital in helping independent drivers for intellectual stimulation and challenging the learner for an active learning atmosphere.

Finally, a unique finding is that online delivery in the current situation (COVID 19) brings more challenges since the lectures are either blended or delivered online. All the independent and dependant drivers for engaging students, increasing understanding, inspiring and challenging learners remain unchanged. The current situation also demands training for the lecturers on various tools that can help engage, challenge, stimulate, and increase the learners' understanding. However, the lecturers may now need to use multimedia tools to accommodate the suggestions from this study and facilitate the independent drivers to enhance quality of teaching in BEHE. Further research could be carried out by involving a higher sample from different HE institutes around the globe to develop a global framework. Also, further research is needed to reflect on how quality of teaching influences student learning opportunities, assessment and feedback, academic support, and learning resources.

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