BRITISH ACADEMY OF MANAGEMENT

BAM CONFERENCE

3RD-5TH SEPTEMBER
ASTON UNIVERSITY BIRMINGHAM UNITED KINGDOM

This paper is from the BAM2019 Conference Proceedings

BAM CONFERENCE - 2019

Title: Assessing the value of Capstone unit in developing critical thinking skills in MSc students

Summary:

This project is funded by BAM – Management Knowledge & Education (MKE) Grants Scheme 2017 – 2018. Our project is centred on evaluating the impact of Capstone in developing critical thinking skills amongst Masters' student. The aim is to explore the extent to which student use Capstone options to demonstrate their understanding and application of high-criticality. Our study was framed theoretically using Bloom's Taxonomy and focused on the six updated levels i.e. remember, understand, apply, analyse, evaluate and create. Empirical data collection is done at pre – and post – stages across students from five European institutions – three in the UK and two in other EU countries. The possible implications of the project will further our understanding of Capstone as a useful academic practice for developing student's critical thinking skills. It will also address the gaps in PTES by focusing on the impact of Capstone on postgraduate student experiences across different HEIs.

Track: Developmental Paper (2.2)

Word count: 2048

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Background

Developing HE students' critical-analytic thinking skills such as apprise, dissect, explore, review scrutinise, analysis, evaluate, probe, examine, assess, investigate, reflection, reasoning and interference has long been a goal of education in general; and both management education (Kolb and Kolb, 2005; Rousseau and McCarthy, 2017) and simulation education (Lovelace, Eggers and Dyck, 2016) in particular. These researchers amongst others have shown that developing the right skills amongst students is taking centre stage as a key strategic decision for most business schools globally. Consequently, there's the growing need to manage these expectations amongst business schools and review bodies such as PTES. In so doing, our study seeks to explore critical-analytic thinking skills in the HEIs through Capstone delivery at Masters level.

The concept of a Capstone unit has gained prominence in institutions around the globe. Aside from the United States of America where the idea emanates from, it has now gained currency in the Higher Education system in Australia and some European Educational Institutions. Within Business School, the aim of Capstone unit can be summarised to include: develop realistic business decisions making ability, apply critical-analytic skill to solve problems and demonstrate communication skills in realistic business contexts. The overarching objectives of Capstone unit are focused on enhancing graduate employability and assuring graduate outcomes (Cullen, 2016).

In UK Business schools, the quality of teaching and learning are now under intense scrutiny due largely to the decline in student recruitment in the recent past. Business schools are facing increasing pressure to deliver programmes that will enhance graduate employability. Masters programmes are not exempt. MSc design, in particular, has seen significant scrutiny. Plans to enhance MSc design, teaching and learning have included the introduction of Block teaching programme, Active-Blended Learning (ABL), Flipped teaching, Capstone units, team-based learning and appropriate assessment to gauge learners understanding. As most of the other activities above are not entirely new to Business school programme, however one aspect that appeared relatively new is the Capstone unit. Hence, we seek to examine its contribution to the attainment of the programme's primary goal – graduate employability.

Institutionally, there's the growing demand to rank business schools based on their postgraduate delivery by PTES. In addition, MSc programme criteria that are been implemented by the specific Professional, Statutory or Regulatory Body (PSRB) insisted on outcome-based assessment that demonstrates graduating students ability to apply critical analysis and thinking skills to solve a real-world business problem. For instance, the Chartered Institute of Personnel and Development (CIPD) advanced level HRM in context requires learners to be able to understand, analyse and critically evaluate real-world situation. As with most business schools offering MSc programmes in the UK, efforts are made to integrate PSRB requirements in their curriculum, particularly those that focus on critical-analytic and thinking skills.

Consequently, our research aims to examine the importance of Capstone unit in developing critical thinking skills in MSc students, especially the use of experiential Live Project and Professional Practice. It is an attempt to understand the extent to which Capstone unit can be used instead of the traditional dissertation unit whilst achieving the same objective – help learners to develop and use critical-analytic and thinking skills. To achieve this aim, the study focuses on the following objectives: (a) to examine the extent to which the Capstone helps

learners to utilise critical thinking skills, and (b) examine the impact of critical thinking skills (Bloom's taxonomy) gained through Capstone to enhance Masters students' experience.

To address these aim and objectives, our study corroborates a recent synergy between Capstone and critical thinking, and develop a conceptual framework. We subsequently assess this framework by using comprehensive primary and secondary datasets. We conducted both pre- and post-stages across students from five European institutions – three in the UK and two in other EU countries. In order to obtain a comprehensive understanding of the study. In addition, secondary data such as organisation reports were used to gain an understanding of developmental trends for Capstone within the selected HEIs. The ongoing data collated will be analysed quantitatively using online surveys across these HEIs in order to examine students understanding and application of high-criticality (critical-analytic thinking skills) from their Capstone experiences across various institutions. Pre-Capstone data is collected to determine students' expectations of their Capstone unit and the critical thinking skills required. While the post-Capstone data is collected to determine the students' understanding and application of high-criticality (critical-analytic thinking skills). The reason for the EU inclusion is to draw valuable lessons from renowned EU HEIs on their Capstone practices.

In this paper, we intend to make five major contributions to extant literature. First, we provide one of the first systematic analysis of how Capstone can enhance critical thinking skills amongst masters' students. In so doing, we respond to an increasing body of recent literature clamouring for improved delivery in postgraduate studies in UK HEIs such as better management education (Kolb and Kolb, 2005; Rousseau and McCarthy, 2007), simulation education (Lovelace, Eggers and Dyck, 2016), knowledge and expertise (McPeck, 2016) and students experience (PTES, 2017). However, we focus specifically on Capstone as a medium for developing critical thinking skills. Second, our research is amongst the frontiers to examine the possibility of Capstone in improving critical thinking skills in UK HEIs. In so doing, we examine extant literature of Capstone and empirically reviewed existing practices that relate to Capstone, with a view to get a robust understanding of Capstone delivery in HEIs.

Third, our study explores datasets extensively and provides detail insights into the study, going beyond the recognised PTES benchmark for measuring postgraduate delivery in UK HEIs. This is achieved in our study by identifying the gaps in PTES and highlighting the importance of Capstone in the overall experience of Masters' students. As such, our analysis provides detailed insights into policy makers and facilitators focus on Capstone. In turn, this outcome will have relevant implications for the way Capstone can be considered as a tool to enhance critical thinking and students' experiences. Fourth, our analytical approach drawn from five UK/EU HEIs, allows us to analyse both hetero- and homogeneity across these HEIs. In so doing, we develop a more comprehensive understanding of how Capstone develops critical thinking skills and contextual issues that may influence these relationships. Fifth, our study explores the practicality of Capstone in developing critical thinking skills. In this regard, we examine existing practices within these HEIs with a view to highlight how current capstone practices within these HEIs can be further enriched in order to enhance Masters students' experience.

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Literature review

Critical thinking is an expectation at Masters level, which is clearly stipulated as one of the key requirements in the QAA Quality Code. Besides, it is an expectation of employers. Recent studies indicate that employers are not in the practice of teaching critical thinking skills and expects business schools imbibe that in graduates (Klimoski and Amos, 2012).

To do this effectively, scholars have identified different interpretations of critical thinking (Abrami et al., 2008; Rousseau, 2012). According to Abrami et al (2008, p.1102), critical thinking is the "ability to undertake purposeful and self-regulatory judgements". Pithers and Soden (2000) were of the view that critical thinking involved good thinking and thinking well. It is also the cognitive engine that drives people's ability to make decisions and solve problems (Brahmasrene and Whitten, 2011). Rousseaus (2012, p.13) describes critical thinking as the ability to "question assumptions, evaluate evidence and testing the logic of ideas, proposals and courses of actions". Recently, McPeck (2016) suggested that critical thinking is the right use of reflective scepticism that is well linked with certain areas of knowledge and expertise.

Critical thinking skills are often emphasised at PG level and should be explored in other Capstone areas. Studies support that critical thinking skills can be developed through experiential learning (Whetten, 2007). In context, management skills are developed as a form of tacit knowledge that can be developed experientially (McKnight, 1991). In this light, the knowledge gained by students on their MSc courses can be fully explored through the provision of experiential opportunities, as provided by the Capstone – live project and placements.

According to Lovelance, Eggers and Dyck (2016), critical thinking in an experiential environment helps to enhance performance, encourage participation, allows creativity and novelty. On the other hand, critical thinking can be limited by the team size because the larger the team the more difficult is it to think critically. Also, critical thinking requires considerable time to undertake and develop.

The theoretical framing that underpinned this study is Bloom's Taxonomy by Benjamin Bloom (1965). However, the revised taxonomy focused on student-centred learning was considered for this study, which improves students' comprehension of and accountable for their own learning, cognition, and thinking. The six stages considered are Remember, understand, apply, analyse, evaluate and create (Nkhoma, et al., 2017).

Presenting the Conceptual framework

Given the above discussion, our conceptual framework is shown in Fig. 1. The first part reflects Research Objective 1 (RO1), which seeks to explain the extent to which Capstone helps learners to utilise critical thinking skills. As such, it extends our view of Capstone, critical thinking skills and current practices across diverse HEIs. The second part addresses Research Objective 2 (RO2), where we explore how the experiences in RO1 enhances Masters students' experiences.

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Figure 1: Conceptual framework
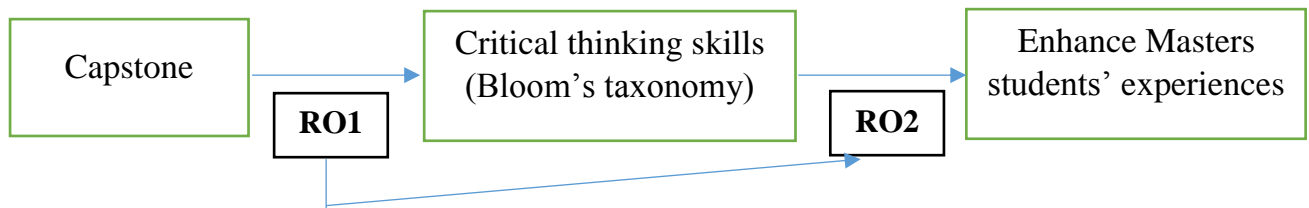
Methodology

To achieve the goal stated above, a quantitative study is conducted, involving selected students within five Business schools, mainly three in the UK and two EU countries. We proposed to administer one hundred and fifty questionnaires from HEIs offering Capstone units. Our use of multiple HEIs allows use to investigate our study from multiple perspectives, rather than from a single viewpoint (Yin, 2003). More specifically, our study will take advantage of a collection of robust and comprehensive datasets across multiple HEIs. This will help to compare and contrast results and draw out valuable contributions to theory and practice (Eisenhardt, 1989).

Both purposive and snowball sampling methods are in use. We use purposive sampling because it provides an opportunity to select cases that give the best chance of achieving the research objectives. The questionnaire protocol was operationalized as follows: first, we contacted the HEIs, seek approval from the Capstone coordinators and provide unique links to our online survey. Although, a prior visit to these institutions is/will be done to introduce the project, capture non-verbal and verbal responses, and address relevant issues. The analysis will be done using SPSS in order to present relevant charts and statistics for the study such as tables, charts, correlation and reliability test (Cronbach Alpha).

Developmental plan prior to discussion/presentation at the conference

This is an ongoing project from May 2018 and its developmental plan for the next six months (March to August 2019) are as follows. First, there will be ongoing improvement of the literature review and theoretical framework for the study. This will be followed by the collection of data from selected UK/EU HEIs and visits to these institutions. Third, we will analyse and discuss the findings from the data collated. Fourth, we will draw valuable conclusions, implications and recommendations. Finally, we will write-up a complete project report/article and submit BAM final end-of-project and financial report.

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