Capstones in the Business School: Reviewing and Informing Practice in Pedagogic Context.

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ABSTRACT

This article pursues critical reflection and constructive themes for capstones in business programs. An analysis of conceptual, practice and empirical capstones literature, particularly in business, is undertaken, noting different typologies and their bearing for business courses of differing breadth. Salient points are then examined in pedagogical context to derive the specifics of educationally robust good practice. Specifically, business wide, small group, problem-based assessments and experiences, integrated across content and student major, are encouraged. A supplement viva voce individual assessment is advocated to capture reflection on integrative and team learning and career oriented evaluation of capstone and course experience.

INTRODUCTION

The business degree in the UK and elsewhere is a broad and diverse entity. Even allowing for the UK's Quality Assurance Agency (QAA, 2015) benchmark stipulations of content, there is scope for sizeable differences of breadth and differences of focus and specialism. This is also true allowing for content requirements of international business school accreditation bodies, e.g. the Association to Advance Collegiate Schools of Business (AACSB, 2013).

The particular diversity of business degrees is also indicated in longstanding reflections on courses, curricula and approaches. Mulligan (1987) in two cultures context notes business programs' reach across both humanities based and scientific subject matter and methods. Mcfarlane (1997) recognizes business course material, approaches and indeed faculty as being likely to comprise both the academic and the vocational in emphasis. Student diversity on business degrees is shown in a number of studies (Biberman & Buchanan, 1986; Loo, 2002) finding strong learning styles variation across cohorts in the Kolb (1984) typology abstract/concrete – active/reflective space.

In the modern day it is accurate to note that looking across provision in the English speaking university sector, business degrees take varied forms. Two salient themes of this are business

degrees with a relative focus on a particular business functional area, e.g. marketing, finance, human resource management and operations – known as strands or majors – and comprehensive business degrees aiming to run across all functional business areas. Another key theme, which may apply to the strand/major business degrees and the wider programs, is the presence of capstone modules requiring participation by all finalist students in the program.

This study seeks constructively to assess the merits and approaches of these capstone modules as deployed on the various business degree programs. The analysis starts by reviewing the conceptual, experiential and empirical literature on capstones, particularly in the business school field, and this is followed by setting the salient aspects from that literature in context of relevant pedagogy. Through this contextual discussion, suggestions for good practice in business capstone deployment, experience/content and assessment are reached and put forward.

THE CAPSTONES LITERATURE

In the literature a capstone is depicted as a compulsory, culminatory course/experience at the end of a program (Durel, 1993; Stephen, Parente & Brown, 2002). A key aspect in the defining literature is that as a culminatory module the capstone should involve looking back in a sense-making constructive way over program learning so far, as well as helping students at this stage to look forward towards building an active role as graduates in society and the economy (Durel, 1993; Starr-Glass, 2010; van Acker, Bailey, Wilson & French, 2014). In this backward and forward looking respect it is viewed that the consolidation and application of accumulated learning will take a form that strengthens the student's capabilities as an employable graduate (Moore, 2006; Holdsworth, Watty & Davies, 2009; van Acker & Bailey, 2011). Though the acquisition of new content learning is played down (van Acker & Bailey, 2011), there is belief or idealization in the transformative potential of capstones in terms of students developing different ways of understanding or frames of reference about their subject field (Sill, Harward & Cooper, 2009).

Within the consideration of learning achieved, a further defining element, especially prevalent in the business capstone literature – is that the capstone should enable and require integration of that learning (Stephen, Parente & Brown, 2002; Payne, Whitfield & Flynn, 2002; Payne, Flynn & Whitfield, 2008; van Acker & Bailey, 2011; Lewis, 2011; van Acker, Bailey, Wilson & French, 2014). This integration may exactly align with the backward/forward looking aspect in terms of the students themselves making and evaluating the links between the learning achieved and the graduate capabilities required for fitness for role, career goal achievement and general employability (Holdsworth et al., 2009). In curriculum content terms the most readily appreciable form that the integration may take would be integration of learning and skills across the business functional fields that business degree modules, majors and strands follow, e.g. marketing, HRM, finance/accounting, operations and economic environment (Bailey, Oliver & Townsend, 2007). The integration can also be deemed to take place across business graduates' somewhat generic skills and attributes, e.g. analytical skills, planning, managing conflict and teamwork (van Acker & Bailey, 2011).

In terms of students moving from a specific major or strand, to a subject-wide capstone involving group activity – another integrative element from the capstone literature is working alongside and engaging students who come with different perspectives and imperatives on the subject (Rowles, Koch, Hundley & Hamilton, 2004). The people and functional field integrative aspect is depicted as especially important for business degrees by Stephen et al. (2002) in the US style system where broad business freshman year studies are followed by major functional focus. Here, the finalist capstone experience – integrative across majors and students – is argued to give appreciation of wider organizational context and concerns to students who have developed expertise in a functional theme. Relevant here is the noting of Helms & Whitesell (2017) of a group, problem-based capstone assessment helping business students to learn to compromise. The arguments here would be just as applicable for UK business strand programs in instances where a cross business group-oriented capstone was deployed.

Another closely related aspect frequently assigned to capstones in both the general and the business specific literature is synthesis. While more is said in pedagogic context later, here synthesis can be seen as the student achievement of integration, particularly with a good degree of autonomy. In the generic literature, Lee & Loton (2015) note that capstones were traditionally designed as a synthesis of all prior course experiences; similarly the UK's Higher Education Academy assert that capstones should require students to synthesize and apply their knowledge and experiences from their whole program (HEA/ Healey, Lannin, & Stibbe, 2013). In the business specific literature, Payne et al. (2008) depict capstones as assessing students' higher cognitive abilities including synthesis of

business concepts, while van Acker & Bailey (2011) in backward/forward looking context see synthesis as key to the reflection upon and integration of business learning.

An important categorization aspect, especially significant for the nature and extent of integration is the typology distinction between mountaintop and magnet capstones. Set out in generic capstone literature by Rowles et al. (2004) and cited in business context by van Acker et al. (2014), mountaintop capstones are deemed to be multidisciplinary, crossing majors and combining diverse groups of students while magnet capstones are viewed to pull together content within a major. Although there is a reasonable degree of diversity to be drawn together within business majors/strands, e.g. market intelligence and communications methods in marketing, the business integration and synthesis discussed above is sure to be greater and more profound in a business school mountaintop capstone than a magnet one.

Turning to syllabus issues, in view of the prevalent linking to integration and synthesis, it is not surprising that a very pervasive curriculum focus both in the reported and in the proposed business capstones in the literature is business strategy and/or strategic management (Payne et al., 2002). Strategic management is widely noted as being integrative of other program learning both in the general business education literature (Nathan, 2015) and, as a rationale for its use, in the capstone specific business literature (Stephen et al., 2002). Being strategic is also depicted as a distinct way of thinking and practising within the business curriculum (Nathan, 2015). As such, engagement with strategic approaches may be transformative in a career relevant way for finalist business students. In this sense strategy possesses a good deal of the criteria for threshold concept or conception status in the curriculum model of Meyer & Land (2003), and this theme is picked up in the pedagogic discussion section later. While strategic management per se may most readily relate to business school wide integration and thus mountaintop capstones, once again, strategic approaches can neatly be deployed in magnet capstones within business majors and strands; the existence of final year major/strand modules like International Marketing Strategy, Strategic HRM and Strategic Finance are effectively, if not complete misnomers, evidence of this. A more substantive difficulty for strategic management focus in business capstones is its likely need for dedicated strategic content. This has been reported as an issue for such capstones where there is emphasis on the lack of new content, but also a lack of prior learning on strategic concepts (van Acker & Bailey, 2011).

Another important syllabus issue – noted as significant for business capstones by Starr-Glass (2010), is the international dimension. While not all graduate employer firms are directly internationalized, many of the rest are either indirectly internationalized, e.g. providing goods/services to exporters, or at least recruiting in a labour market including international workers. It may be wise, therefore, to give the problem activities/assessments in a capstone an international aspect. In line with the content reflection aspects of capstones it would be important to ensure that all programs involved, including majors, cover core international business context and principles at the prior levels.

With a core aspect being a minimum of new content, the capstone module is more greatly defined by the assessment and its formative activities than is the case with a regular degree module. In this sense the capstone can readily be described as an experience and this is often the case in the generic and the business capstone literature (Durel, 1993; Stephen et al., 2002; Holdsworth, Watty & Davies, 2009; van Acker & Bailey, 2011; Gresch & Rawls, 2017; Helms & Whitesell, 2017).

Approaches to assessments in business capstones have been reviewed and surveyed a good deal in the literature (Payne et al., 2008; van Acker & Bailey, 2011; van Acker et al., 2014). In line with the noted requirements of such modules the assessments have been depicted as (needing to be) authentic, experiential, constructivist, problem based and indeed integrative (Levine, 1998; Fyffe, Bailey & van Acker, 2011; van Acker et al., 2014; Helms & Whitesell, 2017).

Many works both in the generic capstone literature and the business focussed element depict final year projects as the way forward in terms of assessment process (Maleki, 2009; van Acker & Bailey, 2011; HEA/ Healey et al., 2013). Projects involving a research component, data gathering, processing and presentation enhance students' information competency, seen as a vital skills area for business graduates by Gilinsky & Robison (2008) in their capstone piece. The research element also helps ensure the sizeable independent learning portrayed as a major capstone purpose generally (Kember & Kwan, 2000). Final year projects and dissertations are seen by HEA/ Healey et al.(2013) as effective capstones for enabling directional diversity and choice both within and across disciplines. This may well be the case in terms of allowing students a research oriented focus on a subject aspect, e.g. of business, closely pertaining to their chosen career. However, it is not guaranteed that this and several other key capstone aspects will be achieved in this way. A student research dissertation with precise and focussed objectives – albeit successfully achieved – may be far too narrow in scope for the achievement of integration even for a magnet let alone a mountaintop capstone. Further, student prioritising of grades may focus their dissertation choice on a topic most

likely to yield marks success even if it lacks authenticity to a plausible career. Finally an individual student dissertation is unlikely to bring the people and context integration attached to the ideal capstone. These points apply to business school and constituent major/strand capstones.

Another form of business capstone assessment referred to in the literature is simulated business start-ups (Steiner & Wells, 2000; van Acker & Bailey, 2011) – usually involving group work. Such tasks and experiences may be effective in terms of their applied and creative nature and in terms of requiring a number of diverse business aspects, e.g. market entry research, legal forms of organization, financial forecast and business planning. They may be especially useful in capstones for enterprise based business degrees and students seeking to be entrepreneurs. However, such start up simulations may be somewhat narrow in scope in cross business terms.

Tutor designed business problem scenario assessments, be they deemed simulations or cases in real/hypothetical established business settings are a further form of capstone assessment again usually in group format (Stephen et al., 2002). These approaches may enable a more holistic and multi-faceted assessment, integrative of a range of organizational perspectives, for students pursuing business management and business analyst careers in all their forms. In the general capstone literature it is noted that the problem solving experience can strengthen graduates for careers that lie ahead (Dunlap, 2005). In terms of authenticity, computer package simulations can generate business organizational outcomes from student hands-on decisions. While the quality of outcome generation can only be as good as the reasoning of the simulation designers, this does allow students to engage in reflection on their active decisions and model dependent results.

The degree of company/industry involvement both in assessment design and in module assessment experience is discussed and investigated in the business capstone literature (Bailey & van Acker, 2013). This aspect most readily applies to authenticity and forward looking organizational career relevance. Such involvement can be valuable in this regard so long as academic final control on learning outcomes, in terms of thematic areas and cognitive level, remains in place. There is caution against a laissez faire or excessively immersive workplace involvement to the detriment of program or capstone learning outcomes. With regard to Capstone internships, Lang & McNaught (2013) reported challenges in the development and capture of meaningful student reflection on these experiences.

An interesting complementary assessment tool to the problem solving and/or workplace experience of capstones is that of concept mapping (Bauman, 2018). This may have value in terms of linking problems to solutions and indeed of reflectively linking capstone/course experiences to aspects of future career goal value. It would very likely need to occur within a presentation or discussion format to ensure explanation, synthesis and criticality and not just descriptive labelling of links.

In terms of empirical primary research, Stephen et al. (2002) presented findings of increased student integrative thinking and objective orientation following cross business large scale strategic simulation activity involving groups across different business majors. Going forward, it would be ideal if capstone assessment could capture the specifics of such changes as well as the primary research.

The work of Gresch & Rawls (2017) regarding a business problem simulation game capstone assessment found students reporting improvement in several generic skills from the experience, including oral communication, leadership, team working and problem solving. In curriculum terms they found students reporting the greatest value of prior courses in the fields in which they also reported greatest opportunity for further learning within the simulation, which included finance, international economics and operations. This correlation is not surprising if the simulation problem gives the greatest chance practically to apply prior conceptual learning from these areas. They also noted students not reporting the usefulness or large scope for further learning on marketing and corporate social responsibility. Gresch & Rawls (2017) note the narrow and purely quantitative data coverage of marketing issues in the design of the simulation task, and recognize that much information in these fields is typically qualitative. This illustrates that capstone problem simulation design is not simple and must include scope for application of prior learning from all of the constituent majors taking part.

Another relevant aspect of primary research is that of Payne et al. (2008) whose findings indicate student difficulty in meeting the extent of integrative challenge of some business capstone experiences and assessments. They link this to potential inadequacies in prerequisites and prior learning. It should be noted that Payne et al. (2008) contextualize their work within the scholarship of teaching and learning, and so some of their conceptual base is taken up in the pedagogical discussion which follows.

DISCUSSION IN PEDAGOGIC CONTEXT

In terms of pedagogy, a major conceptual theme stems directly from the desire to be integrative in business capstone modules. The emerging threshold concepts, curriculum design paradigm stipulates integrativity as one of its criteria for highlighting concepts and conceptions definitive of a subject field and its particular ways of thinking and practicing (Meyer & Land, 2003). By way of detail, being integrative in this paradigm means exposing the previously hidden interrelatedness of matters (Meyer & Land, 2003). This is consistent with the integration objective for business capstones in terms of minimal new content and in terms of all the above cited themes of capstone integration: across reflective and forward looking perspectives, across generic skills areas, across business functional areas – including for strategic management -- and interaction across people with different imperatives.

A second and closely related conceptual pedagogic theme stemming from the business capstone literature is the importance of achievement of synthesis, which as noted above relates to the autonomous capacity for integration. Crucial to note here, the term synthesis is closely associated with the cognitive domain taxonomy of Bloom, Engelhart, Furst, Hill & Krathwohl (1956), situated very near the top. Connected to this is use of the term to denote high grade attainment at the finalist stage (level 6) of degree programs by the UK QAA (2015) Framework for Higher Education Qualifications. This again is consistent with the capstone definitive location at the final level of a business program. What also follows from this depiction is that the extent of synthesis, i.e. autonomous integration achieved, represents a degree of challenge met by the students.

This consideration of integration and synthesis in business capstone context makes clearer some critical points regarding capstone design, both mountaintops and magnets, on business degree courses, both broad based and major/strand based.

The business degree as touched on earlier is a vocational and changeable mixture of topics and themes rather than an academically contained subject with clear bounds like history and physics. In view of this the application of integration in business curriculum, design is more arbitrary. In the threshold concept literature, Land et al. (2005) note that the integrative criterion is more vulnerable to challenge when a subject is taught as part of a wider course, as is the case with functional area major/strand subjects like marketing within business. As such, the range of capstone integration planned for by business course designers can vary a good deal. A magnet capstone within a business major or strand requires a lesser degree of integration and synthesis than a cross business mountaintop capstone. Similarly the magnet requires a lesser distance of contextual transfer of albeit existing knowledge than the mountaintop. Further with the extent of integration/synthesis representing level of challenge faced by students, the demands on students from different capstones and programs is prone to vary. This corresponds very closely with Payne et al.'s (2008) use of Royer's (1979) notions of near and far transfer in their work on prerequisite and integrative concerns regarding capstones. With regard to the required reach of integration/synthesis, there is also strong correspondence here with Vygotsky's (1986) theory of zones of proximal development and the connected practical teaching/assessment tool termed scaffolding, whereby students are provided with supports which allow them to extend and go beyond their existing skills and capabilities (Stanier, 2015). Where the mountaintop capstone assessment integration challenge stretches the limits of this zone for finalist students, there may be a case for deploying a portion of scaffolding in the problem task. While program uniformity is not desired, this potential variation of integration and synthesis challenge means that business schools and supervisory/accreditation bodies should pay close attention not only to pre-requisites but also to assessment design, criteria and load in different kinds of capstone to ensure some level of parity. A further point to note is that while cross business school finalist groups working in a mountaintop capstone for major/strand students ensures a degree of exposure to people and organizational context integration, the group assessment work produced cannot be guaranteed to comprise comparable integration and synthesis by all in the group.

Moving along pedagogic themes, the link of capstone assessment tasks to constructivist learning (van Acker et al., 2014) is reasonable since that paradigm denotes learning coming from a position of something the student already knows and recognizes (Petty, 2004). The integration of that knowledge into different (beyond major/strand) functional and organizational context perspectives would be a key requirement at least on mountaintop capstone assessments, and the synthesis thereof would be a key assessment criterion. Another point is that for constructivist learning to apply for all participants, proper relevance of capstone task design to the prior learning of all constituent majors is, as noted above, absolutely crucial. Again while group work may be vital for this, assurance of attainment by all would be an important aspect to address.

A final piece of pedagogic specifics comes from the noted experiential focus in the capstone literature, including business. Experiential learning as defined by Kolb (1984) has a cycle aspect comprising concrete experience, abstract conceptualisation, active experimentation and reflective

observation. This is most explicitly linked to problem based business strategy capstone learning by Helms & Whitesell (2017). Ability to navigate challenging work in these contexts would also link to the generic graduate skills integration referred to in the literature (Bailey, Oliver & Townsend, 2007). The organizational problem or simulation based business capstone activities and assessments, incorporating a need for data analysis, could quite readily encompass these elements. In particular an input-output business simulation would allow student model-specific reflection on their organizational decisions. Again, a difficulty may occur if a group level division of labor means not all learning forms are experienced by each student. A salient aspect here, linking to the core of business capstone literature, is the question of whether reflection on the course and capstone module experience in career value forward looking terms, can be obtained for all students.

CONCLUSIONS/RECOMMENDATIONS

One of the key reflections from this study is that business capstones can be quite diverse in form, and still be in many ways fit for purpose. In that capstones involve reflection on specific business degree courses, it is reasonable that as the courses themselves differ, the nature of the capstone also varies.

It is viewed here that cross business school mountaintop capstones can be a very effective experience for business specialist major students for them to see the organizational context of their major learning to date. The people integrative element is likely to be strongest when the capstone assessment involves group work necessarily comprising students from the different majors; this would help ensure that students engaged organizational imperatives from a range of perspectives. The group assessment is also likely to necessitate greater student deployment of accumulated soft and generic skills.

The assessment design, carried out by faculty should for authenticity be organizational problem based – making use of business and industry liaison to frame tasks but not becoming an entirely industry located and driven experience. In line with integration and synthesis, the problem scenario should make use of the combined learning of each constituent major of the mountaintop group and also some handling of data new to the students, both quantitative and qualitative. Ideally outcome generating simulation software should be used to enable critical reflection on the results of decisions. It is also advised that given the reach of required integration, a modest level of scaffolding, commensurate with students at finalist stage, should be considered; indeed it could be facilitated by a peer learning element in the scenario assessment, whereby each group member explains the perspective of their major on the task issue to their team mates.

In order to ensure capture and assessment of individual student appreciation of capstone essentials, it is recommended here that an individual oral or viva voce assessment be used alongside the group scenario/simulation work. This would be consistent with Bailey, Oliver & Townsend's (2007) literature survey reflection on the importance of an individual assessment component to go alongside group work. The viva voce could take the form of a short speech followed by a question and answer session. Such a format could allow verbalisation of synthesis and integration aspects; it could also allow student reflection on the course and capstone experience in terms of accumulation and deployment of skills with particular reference to stated career aims. Crucial here would be the encouragement of a critical evaluation element, e.g. reviewing where course elements had held, or failed to hold, career goal relevance and value. This is consistent with the cognitive level of finalist students and the capstone aim of being both reflective and forward looking; it also can aid business school organizational learning as regards graduate career relevance of the curriculum.

LIMITATIONS OF THIS STUDY

While this study makes points regarding employer involvement in capstones, and reviews literature containing employer/industry perspectives, it does not focus on or pursue an evidence based analysis of employer viewpoints upon and contributions to business capstones. It is felt that the education practitioner experience and pedagogic underpinning focus of this piece can be part of an ongoing wider discussion in which other works more closely explore the employer and industry viewpoint and role.

In a similar vein, it is also noted that the analysis here does not explore the mandate typology of capstone which Rowles et al. (2004) denote as one constructed to meet the requirements of an external organization or body. While van Acker et al. (2014) are right that the mandate does not represent a conceptually distinct form of capstone, it may have relevance for business courses not least because of the professional associations in management, accounting and marketing, including

in the UK, whose accreditation may be sought by business degree tutors. It is viewed here that the process of constructing mandate capstones in business schools may warrant its own distinct paper or report in terms of stakeholder oriented content and outcome mapping.

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