Systems Alignment: Linking Tertiary Institution Learning Modes and Graduate Attributes to Business Enhancement

John Hamilton

Sing What Tee

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John Hamilton, James Cook University, Cairns, Australia, John.Hamilton@jcu.edu.au
Singwhat Tee, James Cook University, Cairns, Australia, Singwhat.Tee@jcu.edu.au

Abstract

In recent years moves towards flexible learning have taken many forms across the tertiary institution sector. Along the way, many formats and approaches have been trialed. Previous research has examined influences between tertiary learning modes and student outcomes, or the influences between student outcomes and graduate students' employability. This paper takes a holistic view, and develops a Business Value Enhancement Model, which maps the tertiary institution learning offerings to student learning outcomes, and to business enhancement (delivered by employed graduate students).

Keywords: Flexible learning, flexible delivery, blended learning, traditional learning, student outcomes, business deliverables, marketing, university education, strategy, competitiveness

1. Introduction

Tertiary institutions are seats of instruction for those seeking to acquire latest high levels of knowledge and skills [4][5].Tertiary institutions deliver education to their student body. They up-skill and train students by developing their ability to: (1) action plan and develop enhancement measures; (2) take action and implement the enhancement measures; (3) evaluate the impacts of enhancement measures; (4) learn and assimilate a better understanding of the learning enhancement processes; and (5) diagnose the impediments successful learning enhancements [39].

Holsapple and Lee-Post's [39] tertiary institution learning cycle is similar to Shewhart's 1920's 'plan-do-check-act' quality cycle for business (in Finch [29]). In the business setting a product and / or its quality of service, are both recognised as variable. By employing Shewhart's quality cycle in conjunction with various statistical, tracking and analysis tools, the variability in both products and servicing may be controllable. This approach also has application in the tertiary education sector. Here, student knowledge application solutions are continually revamped to best capture the learning requirements of the student cohort, and to align these with the requirements of both the external environment and the business world [30].

To build appropriately aligned, knowledge-application solutions, tertiary institutions have developed a raft of learning modes, either traditional or flexible [21][33] and these, in-turn, may affect performance outcomes of the students. These measures (capturing teaching and learning effectiveness) are related to the student learning processes.

2. Tertiary Institution Modes of Learning

At the tertiary level, learning may be split into three modes – traditional, blended or hybrid and flexible. Traditional learning is captured in the classroom context [7][31][50][54]. Here, direct contact with the teacher frames the educational context. Face-to-face teaching and learning combined with real-time interactivity delivers typically low levels of student learning control, while teacher-student and student-student interactions are high [7]. Traditional learning may also be segmented into two streams: (1) the face-to-face form as described above; and into (2) the 'blended' or 'hybrid' form where on-line learning is used to extend the face-to-face model into a distant, yet supportive, learning mode.

Blended or hybrid learning may be defined as the combination of on-line delivery and face-to-face contact [6][9][32][75]. Thus, blended learning has some overlap with the traditional face-to-face learning mode. In this paper we will use blended learning to also capture the term hybrid. Typically, at the tertiary level, an on-line learning tools – like Blackboard (http://www.blackboard.com), is engaged as the primary distant learning delivery mode. Blackboard is a common tertiary learning system that engages both teachers and students across a purpose-built, on-

line, course materials website, and it may even do so with a degree of student 'interactivity' and 'individuality'. By employing aspects of 'interactivity' like on-line teacher-student engagement activities, and 'individuality' such as personalised actions and response requirements, the Blackboard on-line approach may be incorporated to help move the traditional face-to-face tertiary learning mode closer to its customers [55]. There are many other complementary on-line learning channels available to the tertiary sector. For example, live e-learning, video conferencing, blogs, wikis, email, instant messenger systems, podcasts, facebook (www.facebook.com), secondlife (www.secondlife.com) and the many on-line learning tools are all available to compliment the traditional face-to-face learning process. Currently, student communities seek a balance to their work-life-family commitments [52], and such flexible modes of learning are often likely to have a degree of appeal to the more independent learner [73].

An extension of the blended mode of tertiary learning is the broader 'flexible' delivery mode. Bryant et al. [10] suggest that flexibility generally offered choices in the learning environments such that the course of study offered better met the needs of individual students. Collins and Moonen [15] expand this view and suggest flexibility across the various tertiary learning modes includes: class time, course content, instructional approach, learning resources, location, technology used, entry and completion dates and communication media. Hill [38] portrays flexibility as a mix of two pathways: (1) flexible delivery – with close associations to blended learning, and (2) flexible learning – with high degrees of pathways flexibility, and of relative pathways strengths.

Flexible delivery focuses on options regarding access for learners. Flexible delivery encapsulates 'the what', 'the where', and 'the when' of the learning occurrence [38]. It is concerned primarily with the management and administration of the provision of access, content, delivery style, logistics and productivity [64][69].

In contrast, flexible learning captures the options relating to 'how' the learning process occurs [38]. Flexible learning focuses on the individual student's processes, and targets the learner's quality experiences. These may be captured as the learner's personal characteristics, learning style, work responsibilities, learning needs and desires and personal circumstances [56][59] [65]. Collis and Moonen [14] listed five dimensions to flexible learning as: (1) flexibility related to time; (2) flexibility related to content; (3) flexibility related to entry requirements; (4) flexibility related to instructional approach and resources; and (5) flexibility related to delivery and logistics. Thus, 'flexible delivery' may be viewed as an overlapping sub-set of the blended mode and of the flexible modes of tertiary learning.

Today, there remains a range of tertiary institution learning modes, and these fit along a continuum into three broad learning mode categories: (1) traditional or face-to-face learning; (2) 'blended' or hybrid learning; and (3) flexible learning. The term 'flexible delivery' as described above is not seen as a fourth mode of learning, but as an overlapping of blended and flexible learning.

3. Measurement of Student Learning

Many options are available to measure and assess performance across tertiary student learning. For example, the institution and its resources may be benchmarked [67], the teaching staff may be measured [24][70], the delivery approaches may be assessed [18], the ranking and locality may be interpreted [24][70], the student outcomes may be assessed [5], or the business enhancement due to graduate student contributions may be analysed [53]. Barrie [5] presents the student's learning outcomes, delivered by the tertiary institution, as generic outcomes including: (1) graduate student attributes; (2) core or key skills; and (3) generic skills. In Australia these generic graduate student attributes are regraded as the skills, knowledge and abilities of the graduate student, and they are perceived to be beyond the normal disciplinary knowledge (applicable in a range of contexts), and acquired as a result of completing any tertiary institution degree.

4. Graduate Student Delivered New Business Enhancement

The above student outcomes areas may be considered as student-acquired, tertiary-learned skills (typically cognitive, interactive, and motor skills), and these, in-turn, are linked to the business-deployed graduate student skills, and into the relevant business types where the graduate students often find their initial employment [19][48]. Cully [19] suggested the way students chose to participate in tertiary education was also driven by a perception (or expectation) that the skills they each acquired were beneficially deployable into their preferred choice area of business. Harvey [34] articulated that a university degree was but one passport into graduate student employment. In 2000, Harvey [35] further suggested that employers' sought a graduate student skills-set of attributes, with real abilities to both

transfer, and apply knowledge, and with the ability to apply the student skills learned at the tertiary institution into the workplace. He stated such student additions to the business may deliver additional successes in the workplace, and that UK employers were using such graduate attributes as a recruitment tool measures [35]. Thus, the tertiary institution provided, and the acquired student learning solutions, would likely be of more value when they closely matched with the business requirements, and particularly when they delivered added value or enhancements to the business. These graduate students provided business enhancements, were also perceived to generate a level of increased satisfaction within the business, and this satisfaction measure may also extend back through the student's acquisition processes to the tertiary institution's learning deliveries. Martin et al. [53] found that tertiary graduate students' satisfaction with their tertiary institution was influenced by their perceived levels of employment preparation, and their tertiary acquired 'competencies' set. Hence, employee performance (and particularly graduate student performance) in the workplace, was also related to business performance, and it may also be considered as a business enhancement measurement block. These performance areas – business and employee, capture the learning mode contribution of the graduate student and they also contribute to overall business satisfaction, and to the overall enhancement of the business.

Hence, regardless of what mode of learning delivery is employed by the tertiary institution, both the skills and attributes that facilitate student education and graduate student employment transitions (and also engender subsequent graduate student career progression) remains a primary educational focus [57]. The tertiary institution learning mode processes are linked to student learning deliverables, and then to a new graduate student, employee-delivered business enhancements set. This new employee business enhancements set is measured via a set of graduate student employee performance and business performance contributions, and a resultant business satisfaction measure.

5. The Business Value Enhancement Framework

The tertiary institution learning modes are linked to a set of business deliverables via the students' tertiary institution acquired skills set and these approaches and components may be consolidated into a conceptual framework model linking the tertiary institution learning modes, the student outcomes and the graduate-student-employee business enhancement deliverables. The resultant conceptual framework termed 'The Business Value Enhancement Framework' is displayed as Figure 1. Figure 1 shows the relevant tertiary institution delivers a student-acquired learning skills-set that relates to future employment areas, and this student learning skills set, in-turn, may be mapped against a graduate-student employee-delivered set of business enhancement measures.
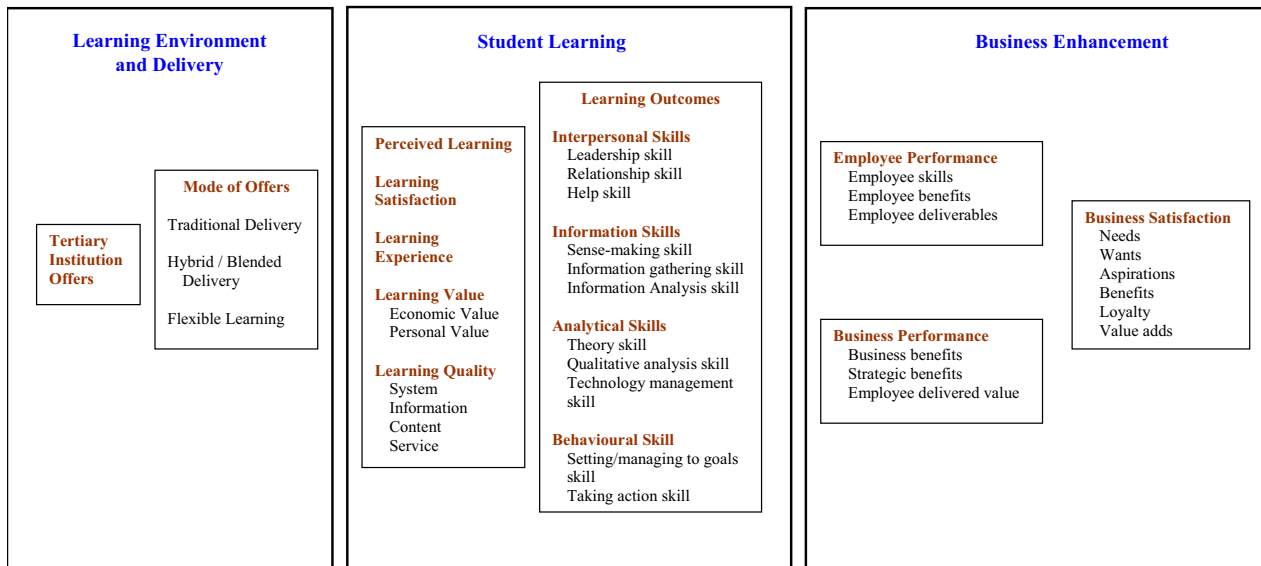

Figure 1. The Business Value Enhancement Framework

The tertiary learning delivery modes used to engage the student, are captured under the university 'Mode of Offers' measurement block.

- Traditional learning captures aspects of face-to-face learning including teacher controlled situations like: the teacher entered environment, the teacher as a decision maker or instructor, the teacher defined student tasks, the competitive learning amongst students, the classroom learning situation, the content – as the important students knowledge mastery tool - implemented through drills and practice, and where the content is not necessarily learned in context of the situation [7][31][50][54].

- Blended learning is really a new version of traditional learning and it encapsulates learning format that combines several different delivery methods. Blended learning is a mix of various event-based activities, such as face-to-face classroom, live e-learning, online delivery, and self-paced learning. For example, some combination of intensive mode classroom delivery supported by web-based technologies (like Blackboard), on-line discussion blogs, wikis, and videos conferencing may be incorporated as a complementary delivery medium set. Blended learning provides greater flexibility in teaching and learning [9][27][32]. Petrova [60] adds that on-line delivery as an implementation of e-learning using web-based technologies. Roffe [62] suggests that that e-learning, e-education, online learning, interactive distance learning, internet-based learning, web-based learning, or virtual classroom differs in their terminology, but really refers to how people communicate and learn electronically. These learning methods differ in how the learning content is delivered.

- Flexible delivery focuses on options regarding access for learners. Flexible learning encapsulates 'the what', 'the where', and 'the when' of the learning occurrence, and also 'how' the learning process occurs [38]. Typically it captures offering choice in the learning environment so that a course of study better meets the individual needs of students [74][38]. Collis and Moonen [14] argued that flexible learning is more than just on-line learning or e-learning, or distance education. It involves providing options in course resources, in types of learning activities, in media to support learning, and many other possibilities. In summary, flexible learning is about learner choice in different aspects of learning experience. Collis and Moonen [14] identified 19 dimensions of learning flexibility that encompass the two perspectives articulated by Wade et al. [74]. They group these options into five blocks: (1) flexibility related to time; (2) flexibility related to content; (3) flexibility related to entry requirements; (4) flexibility related to instructional approach and resources; and (5) flexibility related to delivery and logistics.

This research investigates whether different tertiary learning modes deliver different levels of student exit deliverables. The student learning outcomes block is grouped into two groups – student perceived learning, and student learning outcomes delivered. Allen et al. [1], McFarland and Hamilton [8], Lockyer et al. [47], Neuhauser [58], Thirunarayanan and Peres-Prado [71], and Reisetter et al. [61] have compared on-line teaching with traditional teaching and have found no significant difference between student learning outcomes and student satisfaction. Thus both are determinants of these modes. However, learning outcomes may vary in student characteristics, student attributes and student learning experience. Reisetter et al. [61] also found difference existed in acquired learning experiences and learning skills. Sun et al. [68] investigated e-learning user satisfaction measures. They found course quality, course flexibility, perceived usefulness, perceived ease of use, and diversity in assessments were critical factors affecting learners' perceived satisfaction.

The drivers of student perceived learning developed from the literature, typically capture learning satisfaction, learning experiences, learning value, learning quality and student learning outcomes.

- Learning satisfaction typically measures expectations, needs, desires or experiences, success, value adds, eco value, services, skills sets, perceived learning usefulness, and the like [2][13][39][43][68].

- Learning experiences captures course delivery flexibility, perceived experiences usefulness, perceived ease of use, relevancy, interactions or socializing with peers, interactions with instructors [3] [23][26][49][68].

- Learning value houses perceived economic value such as perceptions on: obtaining a good job, good investment (value for money), student skills achieved (matched to employer requirements) [2][40].

- Learning quality resides under a range of measure typically capturing dimensions of: global applicability, perceived teacher quality, perceived course and content quality, system quality, technology quality, information quality, service quality [2][13][39][43][46][68].

- Learning outcomes delivered by the tertiary institution are typically observed as graduate student attributes, core or key skills; and employability skills. Boyatzis and Kolb [8] matched the employers' skills profiles to the employers' professional accreditation requirements, and developed a set of skill profiles for graduate students. Kretovics [45] and Duke [28] refined the above into a list of desirable learning outcomes – typically categorized as leadership skills, communication skills, interpersonal skills, analytical skills, decision-making skills, technological skills, information gathering skills and behavioural skills (like initiative, goal seeking and action).

Curtis and McKenzie [20] examined employability skills for Australian industries. They matched the graduate attributes of tertiary institutions with employers perspectives of skills amongst university graduates. They identified the key employability skills as: communication, problem solving, analytical interpersonal and leadership, initiative, ethics and social responsibility, and independent learning. These key employability skills were consistent with those of Boyatzis and Kolb [8].

In 2007, Precision Consulting in conjunction with Business Industry and Higher Education Council of Australia identified best practice for integrating, developing, and assessing and reporting on employability skills nationally and internationally [16]. They developed an 'Employability Skills Framework' listing a set of key capabilities. These captured communications, teamwork, problem solving, self management, planning and organizing, technology, life-long learning and initiative and enterprise. Thus, the literature indicates a link between the business and its perception of its tertiary institution graduate students (as employees), and between the tertiary institution sector itself, and it suggests that both contribute to business enhancement [16]. In short, tertiary education is clearly linked to business enhancements through the learning outcomes it delivers to its graduate students, and business enhancement may then be grouped into three performance fields: employee performance, business performance, and business satisfaction with employee contributions.

Harvey [35], Hesketh [37], Nabi and Bagley [57], Heath and Mills [36], and Cleary et al. [16] looked at employers graduate student selection processes and their relationship to the tertiary institution's deliverable education package. Graduate students, with a broad range of personal deliverables, and with solid self-reliance skills, were seen desirable. They further note that employee deliverable business benefits were also desirable. Such measures contributed to business satisfaction, and may be constructed into an employee performance determinant.

- Employee skills have been investigated and tabulated by Silva and McFadden [63] the skills are prioritized and commence with key fields like problem solving, verbal communications and listening.
- Employee business deliverables to the business capturing product and brand quality, specific knowledge, skills and expertise, organizational involvement and teamwork, entrepreneurship and suitability, costs, loyalty and satisfaction are captured by Chen [11], Spiteri and Dion [66], and Tomkovick et al. [72].

Business performance resulting from graduate employee contributions also contribute to business satisfaction, and ar captured as:

- Service encounter quality, and as service quality scales [41].
- Business performance measures like adds valuable information; leading teams; ability to choose correct options; ability to use tools and enhance tools [22].
- Business perceived value of graduate student training and courses [42].

Many of the above researchers have related learning satisfaction to the tertiary institution's learning deliverables. It is projected that learning satisfaction will also relate to business enhancement - as measured by employee performance and business performance and to business satisfaction. Satisfaction may be captured as

- career opportunities, compensation, relationships with colleagues, work deliverables [17].
- relevant knowledge; responsibility and independent learner [44].
- net organization benefits [12] and
- business loyalty [25].

The above measures condense into the Business Value Enhancement Model, as shown in Figure 2. The Business Value Enhancement Model is currently under test as a 'systems alignment barometer' for tertiary institutions. The model shows the linkages between the tertiary institution delivery modes, the major student skills and perceptions related blocks, and the business's perception of its enhancement due to graduate student contributions.
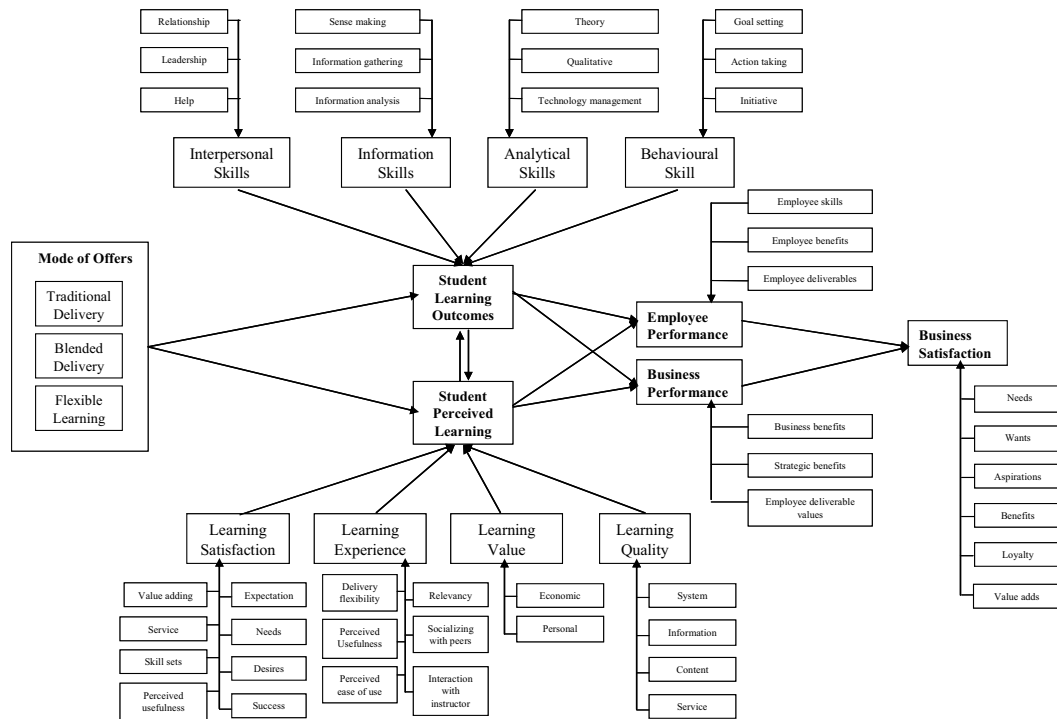
Figure 2. The Business Value Enhancement Model

6. Discussion

Thus far the 'Business Value Enhancement Model' has been developed empirically, and the alignment modes have been established. The measurement indicators have been empirically identified, and this will be empirically analysed using a structural equation modeling approach. The model depicts fourteen projected factor blocks and possibly two mediating variables. Assuming the measurement items build onto one factor each, and that factor score regression weights offer suitable factor loadings, then an alignment model is projected to emerge. It is projected that the business enhancement, created by the graduate student's perceived performances, will be affected by either, or both, the tertiary institution learning modes offered, and by its student-perceived, tertiary-acquired, learning acquisition set, and by its student-perceived, tertiary-acquired, skills outcome set.

7. Areas for Future Research

For tertiary institutions this empirically-developed 'Business Value Enhancement Model' offers the opportunity to determine the effectiveness of its education to work transitions, and to assess if the much-discussed drive towards flexible learning modes actually delivers the successes that are sometimes muted. This approach also offers the opportunity to assess alignment issues over a longitudinal study. Further comparisons between cooperating tertiary institutions may also be possible. Hence, by engaging a Business Value Enhancement Model' approach at the tertiary level, additional realignment and more competitive approaches may be released across management, marketing, innovation, communications, and services. This in turn may deliver new pathways to tertiary institution strategic positioning, and it may offer a possible customized delivery solution which in-turn may capture an additional market. However, it remains up to the tertiary institution as to how it chooses to absorb and adapt to such generated competitive information.

8. Conclusions

This paper builds a Business Value Enhancement Model for the tertiary education sector. The model links the tertiary institution environment and its resultant student learning outcomes set to the business environment. This model is to be empirically tested using a structural equation modeling approach. The model is projected to identify

significant pathways between the contributing factors. The model is design to assist tertiary institution to better align their education deliverables to the requirements of businesses.

A close alignment between the tertiary institutions offerings and the business requirements is projected to enhance the graduate student's employability. Further, to improve the alignment, tertiary institutions may use the Business Value Enhancement Model to indentify and adjust contributing factors. Such identified factors may be used by the tertiary institutions to reposition, or realign, or possibly redesign delivery modes (and even course structure) with the view to deliver the required graduate student learning outcomes pertinent to businesses.

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