

# **THE DESIGN OF TEACHING PROTOCOLS THAT DEVELOP CREATIVITY, INNOVATION AND INNOVATIVE THINKING WITHIN HIGHER EDUCATION BUSINESS SCHOOLS - A TRANSFER OF BEST PRACTICE FROM DESIGN AND ENGINEERING EDUCATION PRINCIPLES**

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## **ABSTRACT**

Typically, the construct of innovation within business education has focused around the concept of developing innovative and creative leaders of business. This is particularly so in the higher educational fields and specifically so within the context of the global market positioning of many MBA programs currently.

However, in many cases, it would appear that business schools are typically embarking on a journey of curriculum development from the point of the core teaching of business methodologies (i.e. silo thinking), rather than incorporating best practice from other disciplines such as those found in leading design and engineering education, where, for example, applied and immersive exercises and project based assignments embed learning and develop a richer knowledge base for the students.

There are, however, significant challenges when attempting to transfer best practice from other educational disciplines into the business education environment. These include: designing the structural framework for the courses whilst incorporating relevant innovation, creativity and innovative thinking catalysts that are cross discipline and transferable within many cultural contexts simultaneously. Within this constraint, it is critical to design exercises that make sense to the multicultural and diverse student body, whilst being tangible, tactile and inclusive (i.e. immersed in the subject). Furthermore, the underpinning of complex theoretical principles, simply and effectively, is necessary if student learning outcomes are to be achieved. As such, developing assessment protocols that measure the understanding and application of curriculum material post the classroom environment is essential in maintaining learning momentum and knowledge retention.

This paper discusses the current thinking, application and learning from the work to date on re-designing the framework and protocols for incorporating innovative and creative themes into higher business education. This paper also illustrates some of the high-impact accelerator learning sessions that have been developed from design and engineering educational principles and transferred into business education. Evidence is also provided to demonstrate how these protocols are remembered by the students post their graduation and how many students continue to use them in their professional practice.

*Keywords: Education, design, benchmark, MBA, innovation creativity, teaching*

## **1 INTRODUCTION**

Postgraduate business schools have typically been viewed as the cash cows of their respective universities due to the ratio of income compared to capital expenditure, for example, compared to science and engineering postgraduate facilities.

The modular and portfolio based design of a typical business school masters program offers significant benefit in terms of agility and flexibility for incorporating new material into the program without major redesigning of the program. However, in many cases the benefit of the framework is devalued often due to the theoretical focus of many courses, subsequently leaving the students with limited readiness for the commercial environment post their qualification. This situation can, in some cases, be attributed to little experiential learning being incorporated into the classroom environment, leading to lower levels of

retained knowledge. Moreover, there appears to be a trend that many students are now delivering a solution based response with little understanding of the route to the solution. This scenario can have serious consequences for the student and their future employer because the disconnect between solution and the process to achieve the solution lessens the individuals ability to think and act in a dynamic, creative and innovative manner.

Design education has long championed the development of creative and expressive thinking (and doing). The principles incorporated into many design courses have the potential to be transferred successfully and meaningfully into business education and used to develop creative and innovative business leaders via an experiential learning environment. This paper discusses the work to date in incorporating design education principles into a business education environment.

## **2 BACKGROUND**

It is fair to say that creativity and innovation thinking are skills that are typically delivered well within the context of design and engineering higher education. Unfortunately, this is typically not the case within the context of business higher education, where there is a propensity to expect future business leaders and innovators to develop key attributes from often bland and stale text books, with little practical and applied (experiential) learning [1].

## **3 THE HYPOTHESIS**

The hypothesis is that students retain more material and develop embedded knowledge within an experiential, creative and innovative learning environment. However, within the constraints of a typical business masters educational environment, it is not possible to engender a spirit of creativity and innovation due to facility and curriculum constraints.

It is therefore argued that new curriculum models and experiential nodes (ie high-impact accelerator learning sessions) need to be designed and incorporated into business masters courses to foster a sprit of creativity and innovation, and thereby increase the quality of student learning and student outcomes and build key skills that are necessary in the business world.

It is suggested that, since design and engineering higher educational programs typically deliver creativity and innovation themes, and because these themes are experiential, they are therefore more likely to develop into becoming embedded skills within the students. It is therefore logical to try to incorporate similar methodologies to those used in design and engineering education into the business educational environment.

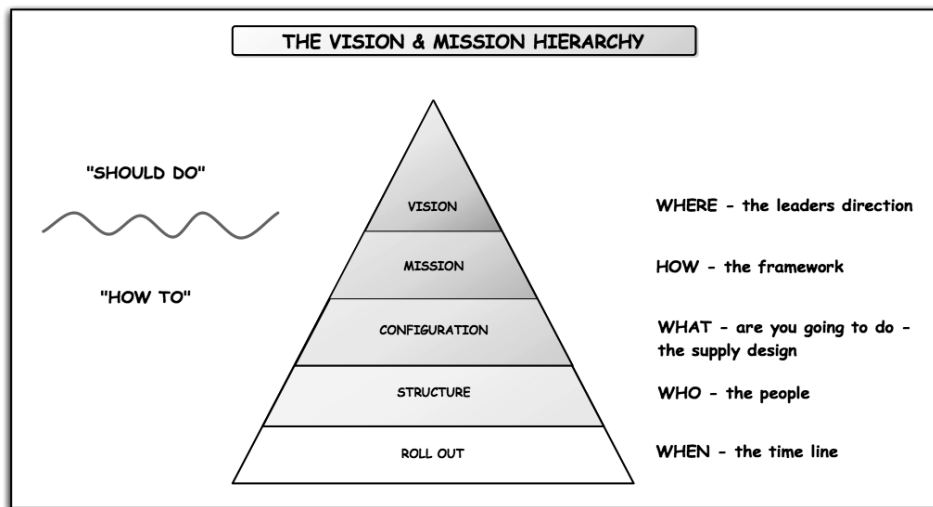
## **4 THE PROBLEM**

The design and constructs of many business masters courses is typically centred on modular, classroom based teaching environments that contain little more teaching facilities than a white board and a projector. Often, there is no backup of the classroom teaching with, equivalent “laboratory” or “workshop” based experiential learning. As such, there is no ability for students to experiment in the same way as, for example, science or engineering students would, in a workshop or laboratory environment. As such, creativity and innovative problem solving skills are not fully developed in many business masters students and when faced with real world problems, many students cannot fall back on embedded skills to deliver a solution.

In many cases, this problem is further exacerbated with curriculum design, that when analysed, encourages and embeds an axiom of siloed thinking [2]. Siloed thinking, encourages the grouping of symbiotic business subject matter, tools and concepts to fit an ordered timetable and listings of convenient departmentalised subjects, that often has little resemblance to real world business practices [3]. As a result, broader and more holistic understanding typically becomes subservient to a specific “text book” focus, thus reducing experiential and retained learning and further suppresses creativity and innovation within many students.

The design of siloed type curricular often forces students to develop a detached and observational view of subjects that leads to assignment responses often focused on the “should do” and not on the “how to”. It is often argued that the “should do” is preferable in the context of developing a strategic focus for students, but this approach typically detaches many students (often with little practical business experience) from a richer understanding of holistic business management practice (see Figure 1.0). In short, many students typically deliver lower level responses to classroom tasks that often do not contain

enough evidence to convince the reviewer that the student could actually “master” the situation, and deliver a robust solution to the problem at hand, should that student be placed in the situation within a professional context.



*Figure 1. The Vision and Mission Hierarchy  
(Illustrating the Line Between the “Should Do” and the Holistic “How To” of Applied Leadership)*

## **5 INCORPORATING BEST PRACTICE FROM DESIGN ENGINEERING EDUCATION INTO THE BUSINESS EDUCATION ENVIRONMENT**

There has been a long tradition within design and engineering education to incorporate wider themes and experiential learning into curricular. Holland [4] describes the process of involving students totally in concurrent product development activities inline with Pugh’s [5] philosophy of total design, that in turn provides an historical indication of what is possible if curricular can be designed with a view to holistic and experiential learning in mind.

An historical example of best practice curricular design, focused on innovation/creativity thinking and problem solving, is that of Medway College of Design, Chatham, UK, (now part of the University for the Creative Arts). In the 1980’s, the College developed a Higher Diploma and then a later Degree in Three Dimensional Design. The course was project based, with each project being designed to stretch the technical capability of the student. Each project had a basic theme that drew out the maximum breadth of study linked to practical examples and analysis. The basic format was:

- Project brief
- Research subject matter
- Prepare working drawings
- Design and engineer the project solution
- Assess the solution and recommend alternative methodologies

Whereas the Medway example is not isolated, it has been used as a benchmark and framework within certain business masters modules within the University of Wollongong’s Sydney Business School, where students are provided with a project brief, expected to research fully the subject matter, prepare a portfolio of information including a report, presentation material (working drawings perhaps) that are focused on delivering a solution to the problem not a weak history of the original problem. Students are then required to present their work to their peers in the form of a “sales pitch”, or “corporate briefing”, that effectively closes the loop within a management context.

In line with the theories of Bazerman and Moore [6], even when presented with the same information, no two students deliver an identical solution to the problem. As such, it is possible for students to assess each others work within a facilitated group environment and then experiment further with alternative options and develop a more refined or broader solution base.

## 6 THE DESIGN PARAMETERS OF EXPERIENTIAL LEARNING WITHIN THE CONSTRAINTS OF A BUSINESS EDUCATION CLASSROOM

The design parameters of experiential learning within the constraints of a business education classroom are controlled by:

1. The current protocols and boundaries of a masters program
2. Consideration to critical elements of situation, time and risk
3. The need for creative and innovative teaching methodologies

The work to date suggests that the best learning results typically derive from “off the wall” teaching material and not standard textbook examples. It would appear that the uncertainty within the material generates the initial element of engagement (perhaps driven through fear due to unfamiliarity) that drives the student further because there is either no right or wrong answer to the situation and no opportunity for peer referral. Another possibility could be that the student develops a survivalist need to discover more about the subject to perform well and this need drives them forward.

In short familiarity (along with the miracles of globally shared essays via the web) breeds complacency, whereas new material drives new thinking and student innovation.

As such, examples (such as the recent 2011 grounding of the cargo ship *The Rena* off the coast of New Zealand [7]) or an article from a contemporary publication (such as the counterfeiting of high-end branded products) are typically injected into the teaching framework. These types of examples help to provide an up to the minute contextual situation, often with a significant element of populist comment, but typically do not have a considered conclusion. As such, students are obliged to filter the data, analyse the facts and generate a conclusion of their own. By doing this, and effectively following the Medway principle, foundation material is embedded more fully and management tools and principles used more extensively by the business student.

## 7 EXAMPLES OF HIGH-IMPACT ACCELERATOR LEARNING SESSIONS

Fine tuning of some of the protocols within existing business classroom parameters can assist in embedding foundation material. However, a higher level of experiential learning is necessary if students are going to develop creative and innovative skills. It is clear that an inclusive, dynamic and live environment is essential if these skills are to be embedded successfully. In short, photocopied case notes and fifteen year old acetates simply don't work.

A portfolio of high-impact accelerator learning sessions has been designed and developed with a business student and a business classroom focus. A brief description of some of the high-impact accelerator learning sessions is highlighted in Table 1.0 below.

Table 1. A Brief Description of Some of the High-impact Accelerator Learning Sessions

A Brief Description of Some High-impact Accelerator Learning Sessions	
101 Uses of a Stanley Screwdriver	Designed to get students thinking and listing all of the uses a customer could have for a simple product. This session forces innovative thinking and organisational behaviour skills. Students are presented with the object and use it as a point of discussion and interaction
1 Meter Cube	Designed to get students thinking outside of the box in terms of methods to attract customers, and product differentiation in a hyper competitive market. Students are presented with a map of an exhibition hall showing the worst and smallest possible site and asked to develop a strategy for promoting their lecturer in this environment
Lift game	Designed to get students to focus on the key element of an issue. Students are presented with a complex scenario and asked to provide a 30 second “lift conversation” about the key element of the issue
People trafficking	Designed to get students thinking in an innovative manner about a fully constrained system and how they can increase the potential profit from the system. In this case students are asked to reconfigure a system to capitalise on a market demand scenario
Applied TRIZ	Designed to get students recognising trends and occurrences in a business. By using the 40 principles of TRIZ students are asked to recognise where they are being used in a business environment and the benefit of its application

A Brief Description of Some High-impact Accelerator Learning Sessions	
Theory of Constraints	This session is based around the use of post it notes. The students are divided into teams and have to write their names on the post it note in a certain highly constrained manner. The original specification is laborious and vexing causing the students to make mistakes and try to short cut the system. As the session progresses, students are allowed to make improvements to their system and in so doing shorten the time and improve quality. This session illustrates the principles of work flow, team work, communication aspects of organisational behaviour, problem solving and creative thinking.
The Maze	Students are given a drawing of a complex maze and asked to navigate it. The session illustrates aspects of communication, leadership and situational observation
Team Leaders	Students are asked to volunteer to be team leaders and typically few do. As such, they are press ganged by the lecturer. At the end of a group exercise they are asked to choose "someone they don't like" from their team to present back. Since they are all friends, this causes some confusion, but it is then used to demonstrate the reframing of a problem and/or the need to make decisive tough decisions
Fishy Pipe	This session is designed to illustrate the difference between optimising a system to its full potential or optimising a systems to the market requirement (i.e. a fully optimised system might carry more overhead than the market demand can support)
Queens Hats*	This session is designed to illustrate progression in design and consumer expectation. Students are asked to timeline, by decade, every day consumer items and also the style of the Queens hat corresponding to the relevant decade. They are then asked to find iconic designs that have not changed over the same period and explain why they have not changed, what makes them iconic and how, in today's environment organisations can develop an iconic design and the impact (both positive and negative) this would have on that organisation
<p><b>Note:</b>  <i>All of these sessions are in-class, group based exercises that demand cross silo thinking to achieve an outcome</i>  <i>All sessions are competitive in nature where one group tries to achieve their outcome sooner than the other groups</i>  <i>* This session is an adaption from Lospennato [8] and his "Evolution of Design: Hats &amp; Strats" example</i></p>	

The learning sessions are delivered in a contextual manner (i.e. back to the core subject matter) and are reaffirmed in later classes. All sessions have an element of post activity interaction such as group/class reflection, development of a model on a white board, the linking back of the exercise to core material etc. Once again following the design education principle of enquiring "Where else have you seen this?" "What would you do differently?" "What do you now know that you did not know before?"

Although challenging, students recognise that there is no right or wrong answer and become more relaxed about offering ideas which is especially important in a multicultural class. These sessions also assist students in becoming more confident about delivering solutions based on incomplete information (i.e. it removes the two handed rule that many business students like to adopt in times of uncertainty, "on one hand it could be this and on the other hand it could be that").

Importantly, because students are interacting with a particular product, system or model, they become more aware of the elements that make the item unique and either user friendly or not. As they reengineer the item, they develop key design skills that would be equally at home in a design studio as the boardroom. These skills include processes such as QFD (Quality Function Development) and systems design and simulation.

It is also interesting to note that the more outrageous the title of the session (i.e. People Trafficking) the more students appear to become bought into the session and the more the learning embeds.

## **8 MOVING FORWARD - THE DEVELOPMENT OF CROSS-LINKED BUSINESS EDUCATIONAL FRAMEWORKS AND THE FUTURE NEED FOR KNOWLEDGE RICH PRACTITIONERS**

There is no suggestion that these sessions are exhaustive and a replacement for core learning material. They do, however, assist the development of cross linked business educational frameworks and develop an element of professional practitioners within the student base. Moving forward and within the Australian context, higher education faces three critical challenges, these are:

1. Changes to Australian masters frameworks
2. Gaps in core skills and employability of graduates in a time of demand
3. Generation Y and their learning style further exacerbating the challenge

## 9 CONCLUSIONS

Like business silos, educational silos exist. The early stages of work in adapting / adopting design education principles into business education appear to offer benefit in terms of student knowledge retention and the delivery of an experiential learning opportunity in, what has often been, a hygienic and barren environment.

Where as this work is in its early stages of rollout, the observations are encouraging enough to suggest that with further work, a more interactive and lasting experiential learning scenario can result with limited need for high capital intensive teaching facilities, thereby benefiting a university's business need and a students educational need.

Business schools have typically been viewed as cash cows from the parent university because of their ability to generate healthy revenue compared to their capital outlay. Whereas the philosophies and tools discussed in this paper do not necessarily require high capital intensive facilities, they do require higher teaching input and energy, and in many cases a "sharp eye and quick trigger finger" to keep the session on track.

The transfer of design teaching methodologies onto business teaching is working and is delivering positive results in terms of increasing student engagement, creativity and innovation. Importantly, the high-impact accelerator learning sessions provide students with the skills and tools necessary to plan and travel the whole creative and cognitive journey and not simply reach the solution blind to the influencing factors along the way. This is especially important in the context of Generation Y students.

The modular and portfolio design of a business masters course offers significant potential in terms of flexibility and agility. Stakeholders within the business education system are typically able to react to conditions without having to completely redesign whole curricular. For example, it is possible within the framework design to incorporate contemporary issues and themes within a single module or across the whole program making the program relevant to a given study group.

Business education is typically associated with a high level of alphanumeric based material. However, many students preferred learning style is centred on a graphical/tactile bias that does not sit well within traditional business type educational environments and is more traditionally associated with the arts and design. Part of the effectiveness of the high-impact accelerator learning sessions is that they rely on significant graphical and tactile material and student contribution, that fits well with student latent learning tendencies and encourages a whole brain approach, that in turn appears to lock in the subject matter from both a theoretical and applied perspective.

## RECOMMENDATIONS FOR FURTHER WORK

Within the context of understanding how students learn best, further work is necessary in moving the concept of literacy beyond the written word and perhaps look to incorporate more in the way of graphical / dynamic based teaching into business education programs.

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