ENGAGING POSTGRADUATE STUDENTS WITH BUSINESS THROUGH DESIGN THINKING EXPERIENTIAL WORKSHOPS

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Key Works: Design Thinking, Student-Industry Engagement

ABSTRACT

It is essential that design education extends beyond the classroom to ensure that students are fully prepared to engage with other disciplines, such as business. Design Thinking has emerged as a key mechanism to engage design with business, and vice versa. This paper describes how the Product Design department at AUT University has identified an opportunity to educate businesses and organisations about the principles, processes and methods of Design Thinking, and maximising the learning educational benefits of this situation, to engage postgraduate students with business perspectives and contexts. Consequently, Design Thinking Participatory Workshops for business were proposed and tested. This paper specifically outlines the background and the theoretical perspectives behind the workshops, as well as describing the current business context of New Zealand. In particular the paper describes how the application of Design Thinking is assisting in the transformation of a number of leading New Zealand businesses and organisations. It then discusses the design and development of the prototype Design Thinking workshops, including the approach used, the two day structure, the role of postgraduate students, and materials presented. The paper then presents the results of one the workshops run to date, including an evaluation from student and industry perspectives.

PRODUCT DESIGN AT AUT

The Product Design programme at AUT University was developed in 2007 and launched with the first intake of students in 2008. In 2011, the Product Design department has seventy five students across three years at undergraduate level, as well as a small but emerging postgraduate programme. In addition the department delivers a innovative Design Major in the Faculty of Business. While the development of a new academic programme provides many organisational and operational challenges, it also presents a unique opportunity to develop innovative approaches to learning and teaching without the constraints of institutional history and tradition. A key focus on the Product Design department has been to expand the definition of a 'product' to become a range of outcomes i.e. 'the product of' a creative design (thinking) process. This is emphasised by developing student capabilities in Design Thinking principles, methods and processes. To assist this, the department has instigated a number of approaches including enhancing staff understanding and capability, developing Design Thinking models, and a range of resources to

support the learning and teaching. In addition the department has developed a approaches to student projects that emphasise Design Thinking.

Design Thinking is described as the study of the cognitive processes that are subsequently manifested in design action (Cross 1992). Dunne (2006) distinguishes design from design thinking, describing design as the way that designers think: the cognitive processes they use, as opposed to the objects they produce. Owen (2007) describes Design Thinking as the reverse of scientific thinking where the scientist shifts facts to discover patterns. " The design thinker invents new patterns and concepts to address facts and possibilities by using inductive, deductive and abductive reasoning" (Dunne & Martin, 2006, p. 517).

EDUCATING DESIGN THINKERS

Owen (2007) examined the challenge of educating designers in Design Thinking for broader roles in areas outside of traditional design activities. Designers are often taught using tacit approaches (as opposed to explicit or more formal approaches) in design education programmes. This approach to teaching design, may not provide a broad enough foundation for the diverse array of current design contexts. Therefore, Owen (2007) proposes that more formal courses be developed to teach Design Thinking, and describes the need for a new type of academic leadership in this area. Dunne and Martin (2006), Brown (2008), Lindberg, Plattner, Meinel, and Leifer (2011), Gumienny, Jobst, and Meinel, (2008), Lockwood (2010), and Owen (2007) all identify a number of key attributes and themes that underpin, or are central to the concept of Design Thinking. The following a describes some of these key themes:

Human-Centeredness: Having a deep empathy for (and understanding of) the people whom you are designing for, is a critical aspect of design thinking. "It all starts with the customer, and design must be the advocate for the customer" (Lockwood, 2010, p. 87). Design thinking is "powered by a thorough understanding, through direct observation, of what people want and need in their lives and what they like or dislike about the way particular products are made, packaged, marketed, sold, and supported" (Brown, 2008, p. 86). Having an empathetic approach is essential to developing this understanding of people.

Creativity and Experimentation: Underpinning the unique 'world view' that designers possess is the notion of an optimistic outlook driving creativity and experimentalism. Designer Thinkers assume that no matter how challenging the constraints of a given problem, at least one potential solution is better than the existing alternatives (Brown 2008). Owen (2007) develops this theme and has assembled a catalogue of the characteristics of the creative Design Thinking individual. These traits include sensitivity, a questioning character, a broad education, asymmetrical thinking, personal courage, sustained curiosity and dedication. The idea of radical (breakthrough) innovation rather than incremental innovation is also important. Significant innovations do not come from incremental tweaks (Brown, 2008).

Integrative Thinking: Designers not only rely on analytical processes (those that produce either/or choices) but also exhibit the ability to see and grasp all of the key and sometimes contradictory aspects of a problem and synthesise new solutions that go beyond and dramatically improve on existing alternatives (Brown, 2008). In addition the idea of integration between the creative, and the traditional concurrent business analysis is important (Lockwood, 2010).

Design Thinking Models and Processes: Design Thinking is underpinned by a number of key process models, and methodologies which have evolved from the design profession. As Lockwood explains "it is not a substitute for design, but rather a methodology for innovation and enablement" (Lockwood, 2010, p. 11). Lindberg, Gumienny, and colleagues (2008) describe how sequential (step by step) process models play a core role in design thinking education, however they suggest that design thinking principles ask for much more adaptability and flexibility of design workflows than sequential models suggest.

POSTGRADUATE PRODUCT DESIGN AT AUT

In the postgraduate Product Design programme at AUT University, the application of Design Thinking is beginning to drive strong links and engagement with New Zealand business. This imperative has resulted in the development of number of specific learning and teaching initiatives, including a working partnership with a number of New Zealand businesses and design organizations. Correspondingly, a close working relationship has been developed with Better by Design (BBD), an organisation within New Zealand Trade and Enterprise, vested with lifting business performance through the development of design and Design Thinking capability within New Zealand businesses. BBD helps New Zealand businesses increase their international competitiveness by integrating Design Thinking principles across their organisation. This includes undertaking 360 design audits, the running design integration programmes, and the mentoring of businesses. In addition this includes the running a renowned CEO conference every 18 months for New Zealand business leaders, and aimed at raising the profile of design and Design Thinking. As Leavy (2010) states, Design Thinking, or the creative principles associated with design, may now have something very significant to offer when applied to businesses and business management and strategy. Given that businesses are facing increasing pressures for innovation, it is not surprising that this concept is gaining currency among business practitioners, consultants and scholars because Design Thinking seems more suited to the task of creating the new, experiential artifacts and environments (Bauer & Eagen, 2008). Key staff from the BBD programme have worked with the students on an ongoing basis including providing presentations, workshops, and discussions.

DESIGN THINKING PARTICIPATORY WORKSHOPS

As a result of this relationship, and though ongoing discussion, an opportunity was identified for the AUT Product Design department to develop and deliver Design Thinking workshops to businesses and organizations to compliment and support the strategic goals of the BBD programme. While BBD is doing a very good job of raising the awareness of the role of design integration with business, and working with businesses to develop individual design strategies, there is currently a lack of 'hands on' capability development within the organisation. The primary goal of the Design Thinking workshops are to provide business leaders (i.e. chief executives (CEO's), chief financial officers (CFO's), lead engineers etc.), who have committed to integrate design into all aspects their businesses, further understanding of, and an improved capability in Design Thinking through a transformational, experiential encounter.

In addition to the overall purpose of the Design Thinking workshops to benefit business, the opportunity to include postgraduate product design students in the workshops brought significantly enhanced value to the proposition. The postgraduate product design students at AUT University have a well-developed theoretical and practical understanding of the Design Thinking principles and processes. The students were partnered with business leaders in team situations. It was anticipated that the students would benefit from the close contact with business leaders and would gain a deeper understanding and confidence of business thinking and contexts with 'real world' participants. Correspondingly, the business leaders were expected to benefit from the close, collaborative practical interaction with a group of young and enthusiastic creative designers.

PROTOTYPE WORKSHOP STRUCTURE AND DESIGN

To develop a sound, robust, and long term, sustainable model for the workshops, a process of 'action research' is currently being implemented through a process of evaluation. The goal is test key ideas, approaches, structure, resources and improve these each time a workshop is run.

An initial two-day long workshop model was developed. The model involves key two facilitators from the Product Design department, with six postgraduate students and key business leaders from BBD participating businesses or organisations (twelve participants in total). The workshop is structured with business leaders partnered with the AUT postgraduate product design students in two or three groups (of four or six). A specific Design Thinking challenge was 'solved' in six consecutive sessions over a two day period. The AUT postgraduate Product Design students act as

'guides' and provide an experienced 'hands on' design link to the business participants. It is important to note that workshop facilitators, are able to participate as required to guide groups, or provide inspiration and enthusiasm, as well as to monitor the relationships and dynamics between the different participants (and take pressure off students if necessary).

LEARNING AND TEACHING RESOURCES

The workshop process is underpinned by the teaching, exploration and application of Design Thinking, principles, processes and methods. Design Thinking "is not a substitute for design, but rather a methodology for innovation and enablement" (Lockwood, 2010, p. 11). To underpin and provide a sound pedagogy to the workshop, participants are introduced to a series of methods through the use of a specially developed Design Thinking Methods Toolbox. The toolbox has been derived from a larger resource, developed over the last two years, to underpin the learning and teaching in the undergraduate product design programme, and in a number of courses taught by the school of design in the Faculty of Business. The Design Thinking Methods Toolbox provides thirty six key methods, based on an overarching Design Thinking process model, and includes key diagrams, examples, links and references. Design thinking require greater adaptability and flexibility of design workflows than sequential models (Lindberg et al. 2008). Despite this, sequential (step by step) process models play a core role in design thinking education. This was discussed with participants, as well as that the idea models are just that, yet provide a strong platform in a time-restricted, 'one off' learning and teaching situation.

For the workshops, six key methods from the Design Methods Toolbox were selected. The methods were sequentially introduced and demonstrated, before being applied to the design challenge during each session. These methods included the following. 1 & 2. Observational Research: primary research drawing upon ethnographic research methods such as observation and role playing. 3. Insight Generation: from the research, key insights are synthesised and articulated, as "synthesising is a critical part of design thinking, as it helps to converge highly divergent states of information" (Lindberg et al., 2008, p. 248). 4 & 5. Creativity/Ideation: using the insights, ideation literally uses creative processes such as brainstorming, and Lotus Blossom to explore ideas and to drive lateral thinking. 6. Visualisation/Prototyping. Design Thinking is a prototyping process to understand what people want (Serrat, 2010, p. 3), through the generation of concept sketches, rough physical mock-ups, or stories (Lockwood, 2010).

EXAMPLE WORKSHOP

For the workshop presented as part of this paper, participants were paced into two groups of five individuals. Each group contained two students and three business leaders. The business leaders were from a variety of small to medium sized manufacturing companies. The structure involved six carefully designed two hour sessions. Breaks were scheduled between session for socialisation, informal discussion and reflection. Following a warm-up introduction session, where participants introduced themselves, the groups were presented with the design challenge (or design brief). In this particular instance the participants were challenged to use Design Thinking to improve the 'experience' of pedestrians using the 'Barnes Dance' crossing on the corner of Queen St and Victoria St, in central Auckland, one of New Zealand's busiest areas. The brief was carefully designed to be open enough to be provocative and to allow creative scope, with opportunities for creativity and innovation coming from engagement and application of the Design Thinking principles and methods. At the commencement of the challenge, participants were encouraged to both keep an open mind and to enjoy the process through active engagement.

Each session involved a short presentation lecture (on the specific method to be used), real world examples, and a follow-up discussion to clarify issues before participants applied the method to their 'design brief'. The following is photographic documentation of some of the key stages in the workshop.

MEETING/OBSERVATION/INSIGHTS

The groups were asked to use direct, but quick observational research methods to develop and understand key issues, problems and opportunities, and to identify key insights to drive the creative Design Thinking process (see pictures below). Participants were encouraged to role played the situation as an additional method to help developed personal and group reflections.

Figure 1: Examples of observation and insight development

BRAINSTORM AND LOTUS BLOSSOM

Research generated from the observations and role-playing phases were analysed using a variety of mapping techniques. This process was used to help generate insights from the research to drive the subsequent creative phases. The groups were asked to use brainstorming and Lotus Blossom creative methods.

Figure 2: Examples of Lotus Blossom

IDEATION/ PRESENTATION

Pictured is the development of key ideas in both 3D and 3D form. At this point groups return for more observations to check and reflect on key ideas. The workshop finished with each group unveiling their final design concept using 3D models, drawings and PowerPoint.

Figure 3: Examples of ideation and presentation

EVALUATION

To refine the early prototype workshops and to ultimately develop a successful workshop model, it is important that each workshop undertaken is evaluated using a Formative Evaluation framework. Evaluation is undertaken for the purpose of improvement (Davidson 2005). A formative evaluation process is focused on the core question of 'how can this be improved?' It commonly used for a variety of situations (i.e. new product evaluation and develop, to help a new service or programme to 'find its feet', or explore ways to improve more mature new products, services or programmes). In this instance the evaluation was conducted in an informal open-discussion format with comments recorded on a large sheet of paper

Figure 4: Evaluation Session

 The following is an exert of some of the comments (from both students and business perspectives)

- Student voice
- Business professional voice

What was the most useful learning you got from the workshop?

- How much progress can be achieved in just days
- The power of collaboration
- Students are very good - and have come a long way since I first met them this year
- Quick-fire prototyping - how useful it is to work in three dimensions
- Knowing when to stop
- Pre speech talk very good
- Seeing professionals in action, how they analysis quickly and effectively
- Liked fast pace of business thinking

- How to figure' people out- have to think about the way we would approach things to get ideas across- keep it moving

What did you enjoy most about the workshop?

- 3D observations - learning to see things in a different way
- Working with a wider group of people and seeing how they approach thing differently.
- Imagining how these (good) ideas could be taken to the city council
- There is great story here!
- This was way better then the IDEO workshop - you can't do anything in 4 hours (the IDEO workshop)
- Exchanges ideas with professionals
- A safe environment, and a good stepping stone for students.
- Fast pace, and how it was good to come up with so many ideas in such a short pace of time

What did you enjoy least about the workshop?

- Not knowing whether to jump in or not (referring to the helping of students)
- Students NOT equal - saying there are equals made more pressure
- The pressure to perform in front of tutors (facilitators)
- Professionals and students aren't really equals
- Too many middle aged men!
- Lack of skills in observation

Is there anything that you would recommend that we change (add or remove) to improve or further develop the workshop?

- Too much covered.
- Supply more information i.e. be good to give more pre workshop readings, more examples in the presentations etc.
- Will be important to discuss more with participants how Design Thinking can be transferred to their business or organisation
- The day structure needs more accuracy - i.e. breaks for food etc needs to be more defined - working over lunch not a good idea
- Sessions too long on day one - overload
- Need better structure/definitions around Insight/Persona generation. The use of Personas is important but could be waited more or less. Persons very useful in generating/checking ideas.
- The task (design brief) could have been shaped a bit more

Discussion

Feedback from the initial workshops has been positive and the facilitators believe that the first of these has successfully provided a strong framework for a long-term sustainable model. From the evaluation and subsequent feedback (informal) it appears that both the professionals and students felt that the workshop provided an excellent Design Thinking experience, and that overall, this is a sound model worthy of further investment and development. In addition, based on the observations and reflections of the facilitator's and participants, a number of key themes and issues emerged:

The workshop needed greater structure to help a large amount of information to be concisely presented over the two day period. There was a tendency at times for the business professionals to be distracted by pressing work issues. For a transformational 'deep dive' experience was thought to be essential that distractions were eliminated.

Both groups of participants appeared to appreciate the external (off campus) real situation component of the challenge (design brief), and the opportunity to use fundamental primary research techniques to analyse and understand a context. Specifically, they reported the human aspects of the challenge (design brief) as enjoyable as well as of high educational value, the values in using these to drive their creative thinking.   Some participants struggled to differentiate

the difference between a 'conclusion' from research, and the generation of higher level key' insights' to drive the creative Design Thinking process. The notion of an insight is a difficult idea to convey, and more work needs to be done to facilitate this in the workshops, to as well as distinguish the idea of insights from Personas, and how these two methods may be used to support each other and the design thinking process.

The business professionals reported enjoying the unique opportunity to work closely and collaboratively with the students on an equal footing. From their perspective, this was integral to the success of the workshops, and some suggested it was 'great to feel like a student again'. However, the students were very cognisant of the dynamics between the business professionals, the way they operated and the power relationships and dynamics between them. A number of times creativity became 'bogged down' due to these dynamics, and the students needed to work hard to push the creative process along. While this was challenging at the time, this was later referred by the students as a key learning and was felt to be important in helping them develop a deeper understanding of business contexts. The facilitators noted that this dynamic requires careful management, in order to help all participants to get the most out of the experience. The facilitators ability to temporarily 'join' and participate in the group activities was considered valuable to help remind participants' of the purpose of the workshops.

The business professionals appeared genuinely 'blown away' by the ability of the students to quickly and effectively take ideas into drawings and 3D models. It was noted that this was a critical aspect of the workshops. Business professionals were experientially drawn and transformed by the power of prototyping as a method and process to drive creativity and innovation. The 'non-designer' participants in the group were quickly inspired to draw and use hot glue guns and to actively and collaboratively engage in the groups' prototyping sessions.

CONCLUSIONS

The learning and teaching of Design Thinking has emerged as a key way of engaging design with business, and business with design. This paper has presented an example of how the Product Design department at AUT University has developed an innovative Design Thinking workshop to engage postgraduate students with business professionals, to help educate key individuals in businesses and organisations about the principles, processes and methods of Design Thinking.

The evaluation of a specific workshop has indicated that with some refinement, the model developed offers an excellent opportunity for universities to assist in developing Design Thinking capability, and to assist students in understanding a professional environment, as well as further develop collaborative skills outside of the traditional classroom/studio situation. Feedback from both students and business professionals indicates that all participants' enjoyed the workshop, and helped them develop a deeper understanding of Design Thinking. With continued development, evaluation and further implementation, it is hoped that the workshops will contribute to raising the international competitiveness of New Zealand businesses through design.

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