

PRACTICE-BASED AND MATERIAL FOCUSED: A CRAFT APPROACH TO TEACHING DESIGN INTUITION

AUTHOR: Shane Inder Co-Author: Dr. Stephen Reay

School of Art and Design, AUT University, Auckland, New Zealand, shane.inder@aut.ac.nz, stephen.reay@aut.ac.nz

ABSTRACT:

Successful collaborative design harmonizes diverse inputs from disciplines with often contrasting paradigms (Reay & Withell, 2013). Designers must respond to these challenges using both objective and subjective, quantitative and qualitative methods of research and analysis (Cross, 2001). The use of more tangible, quantitative methods to elicit evidence based functional design solutions has a long history. A designer's tacit knowledge or intuition (Douglass & Moustakas, 1985) used to interpret less tangible, ill definable aspects of qualitative research for consideration in the designed outcome, requires education and experience. A craft or artisan design approach requires a substantial investment of designer's intuition to realise functionally and aesthetically meaningful outcomes (Kälviäinen, 2000). In order to develop student's design intuition in the Product Design Department at AUT University, we have developed assessments and engaged with expert practicing artisans to exploit their intuition driven approach to inspire and educate students on intangible aspects of design.

This paper will discuss an undergraduate project and assessment that utilised an artisanal, practice-based design approach aimed at developing deeper understanding of form, materials and aesthetic and to generate 'accidental learning' (Notar & Padgett, 2010) outcomes through experimentation. We will describe how the assignment culminated in a curated exhibition of designed artefacts, delivering an authentic-learning (Rule, 2006) experience that students describe as being intensive, aspirational and engaging. Individual case studies will be presented describing successful responses to the assessment. Finally we will describe difficulties students faced by moving from alternative process models, such as a structured 'design thinking' (Brown, 2008) focused project or traditional technology driven model, into a more experimental 'design making' approach.

Keywords: Authentic Learning, Design Intuition, Design Thinking, Practice-Based Design

1. INTRODUCTION

Measuring the success of pragmatic, quantifiable characteristics of small-run or one-off designed artifacts such as product attributes, features, price and performance can be relatively straightforward. Evaluating the qualitative, subjective or emotional success of the same artifact is not always as easy. Embedding emotional value into an object to take it beyond utility, to create a synthesized, desirable product requires extensive training and experience. As the discipline of industrial design has expanded to include design thinking and human centered design, the time and resources available to teach intuition driven, aesthetic aspects have correspondingly contracted. "Craft skills and carefully honed intuition may have sufficed in the past, when designers primarily contributed form to industrial products" (Norman, 2014).

At XXXX University a year 2 project was developed that aimed to introduce the notion of design intuition in an efficient and effective way over 6 week time period. This assignment was delivered as part of a larger curriculum development that distinguishes projects as 'design thinking', 'traditional product/industrial design' and 'emotional design'. The assignment asked year two students to develop a lighting fixture, a small piece of furniture or a domestic object for limited production. Four components of the curriculum were identified as critical to the success of the project:

- Experimental; extensive experimentation through 'design making'
- Critical: formal and informal critiques
- Mentored: expert artisan mentoring
- Authentic: exhibition of designed outcomes.

Initially students were asked to use wood and metal workshop facilities to explore and 'play' with a range of materials, including wood, ceramics, specific metals (copper, brass and zinc) and natural fibres to develop an intuitive 'feel' or understanding of their characteristics. They were also asked to compare and contrast the materials and to explore the intersections and joints connecting individual and multiple materials. This early time was also spent contextualising the project by researching the market, the user, artisanal designers and existing products. Critiques throughout the process by lecturers, industry collaborators and artisan designers helped guide students toward understanding successful material, form and function amalgamations.

2. DESIGN MAKING VS. DESIGN THINKING

The previous assessment for the year 2 students adhered closely to an established 6 stage Design Thinking process model specifically developed for the curriculum. Each stage roughly correlating to a week of the assignment and was underpinned by stage-specific research and



Figure 1: "Design Thinking" Process Diagram. Andrew Withell, 2012

Design Thinking, while sometimes difficult to define, is a useful framework to introduce product design students to, if used to augment existing design frameworks and methodologies. (Withell, Cochrane, Reay, Gazioulusoy, & Inder, 2012).

Prior to this 'design making' assessment students had become familiar with this Design Thinking curriculum (pedagogical approach, syllabus and resources). The curriculum was delivered with an understanding that Design Thinking is a framework, process or way of practicing (Kimbell, 2009) (Figure 2). This structured approach has proven successful for projects which require problem identification prior to iterative solution development. Assessments which aim to elicit feasible, viable and desirable solutions within the tight specification, resource and time constraints imposed by typical industrial design undergraduate assignments require this more regulated approach.

Although this design making project borrowed from the familiar framework, tools and resources, such as role-play or scenario building to uncover human-centred issues, had limited value for an artisan approach. The research in this case required students to explore materiality and context rather than user needs. So although the Design Thinking framework gave some structure to the project it was more loosely applied than previous assignments.

3. TEACHING DESIGN INTUITION

Four components have been identified as critical in developing design intuition in students.

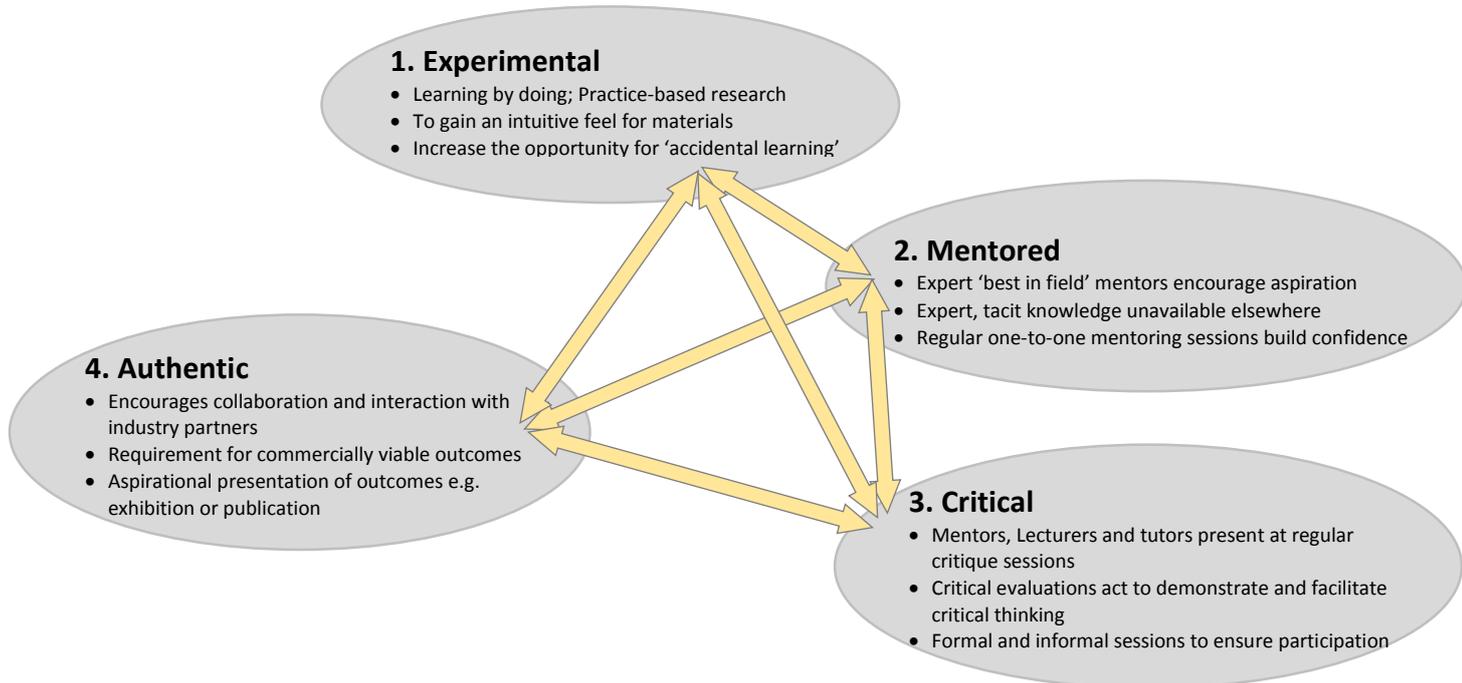


Figure 2: The four Key Components to teaching design intuition.

3.1. EXPERIMENTATION

Students were asked initially to develop a large body of research to draw upon when beginning ideation. The early research phase was context, material and process focussed.

- Students were asked to research context gather imagery using the Internet, visits to local design stores and informal interview/discussions with local designers. Displaying images was intended primarily as inspiration, but also to ensure they are generating original ideas and not repeating existing designs and as a focus for tutorial discussions.
- The design brief asked students to use a palette of wood, metals, stone and fibre. To gain a thorough understanding of these material's properties and characteristics, students sourced and experimented extensively. This materials research focussed on learning possibilities and limits of the various materials and would inform the project. (Figure 3)
- Students were also directed to explore methods and processes, i.e. ways of manipulating materials that deliver surprising, innovative, or unusual outcomes.

Collaboration was encouraged, with images of existing designs, innovative use of materials or promising processes, being displayed in studio spaces and cached via a project blog. Given the student's familiarity and successful use of Withell et al. (2012) Design Thinking Process model, this stage of the design process was referred to and later assessed, as the 'Investigate' stage.



Figure 3: Extensive experimentation. Students sourced a variety of materials to combine and contrast.

3.2. EXPERT MENTORING

In a 3 year product design program, the curriculum must be structured to deliver a broad range of skills and knowledge. Designers are great generalists (Norman, 2014). However generalists need to collaborate with specialists to build and deliver the depth of expertise required in any given discipline. This is expertise a practicing artisan can offer students in a mentoring role.

One critical component identified to effectively and efficiently introduce intuition was the use of mentors for one on one and small group tutorial sessions. Our industry mentor for this project had extensive experience and was recognized, by the students as being 'successful' in her field. Her success was highlighted by having a visible portfolio of successful designs, a recognizable brand and being represented by a number of local and international stores. A less visibly successful mentor may not have earned the same level of respect from students.

The mentor attended and introduced the project at the beginning of the 6 week project. She attended weekly 3 hour studio sessions along with mid-project and project conclusion formal critiques. The mentor also contributed considerably to refining the project brief.

Although to a degree altruistic, the mentor received considerable publicity for her mentoring contribution. The high profile exhibition of the resulting student work ensured online media, newspapers and magazines publicized her great work in mentoring the students.

3.3. CRITIQUE, ANALYSIS AND REFLECTION

At the beginning of week 3, students were asked to analyse their investigations of context, materials and processes and begin to elicit insights to stimulate ideation. Students were asked to explore and analyse their research for opportunities:

- Context: e.g. "What are areas that few people have thought to design solutions for in an artisanal, materials focussed way? What are the opportunities with trends and fashions?"
- Materials: e.g. "How might you use different types of wood or metals that were previously underrepresented, overlooked or undervalued?" It was suggested that materials with common or familiar product associations pose opportunities for use in new or unusual ways.
- Processes: "How might those materials be exploited using new or unusual processes, methods or finishes?"

Annotations outlining observations, insights and reflections collated with imagery and presented in studio spaces, described the thorough analysis of student's research material (Figure 4). During small group and whole class (24 students) critique sessions, industry mentors were able to bring an external, non-academic and pragmatic viewpoint to the student's evolving work. Other students taking part in group critique sessions were able to bring their well-researched, often naïve, though always unique perspective to the table. Lecturers and tutors safeguarded the delivery of appropriate theory and ensure that an appropriate level of academic rigor was maintained throughout the process. Extensive research, followed by thorough analysis, collation and critique enabled students to consolidate an understanding of the artisan approach to design that would form the foundation to begin ideation.



Figure 4: Incremental development of one student's rocking egg timer.

3.4. AUTHENTIC

According to Reeves, Heerington, & Oliver, (2002), an authentic learning environment can be best described as one where “activities represent the types of complex tasks performed by professionals in the field, students have access to resources and engage in collaboration, articulation and reflections”. Lecturers describe deeper engagement and better outcomes when projects have real world application.

Having run various assignments over a 3 year period with an authentic learning approach, the value of an aspirational end goal to drive students, has become evident. Publication and/or exhibition are ideal vehicles for motivating students to develop their work beyond academically assessable outcomes. Exhibiting in a retail environment, as though the work were 'for sale', requires that finished artefact is, to the best of the student's ability, feasible to manufacture and at a viable cost and price. This authenticity pushes students to think holistically to develop feasible, viable as well as desirable solutions (Figure 5).

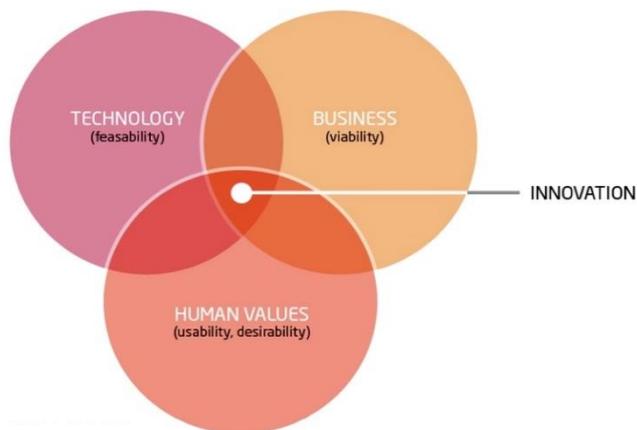


Figure 5: Design Thinking; Feasibility, Viability, Desirability Model. (HPI School of Design Thinking)

With free access to well-equipped workshops students are able and required to test and prototype extensively. However, tutors and mentors encourage students to seek outside expertise and to source at least some component parts of their final design from industry sources. Students not only began to build a network of component manufacturers and suppliers, but also gained valuable insight from external industry experts informing their designs. This also enabled them to understand the cost implications of varying production quantities. Students were asked to develop a breakdown and Bill of Materials (BOM), describing individual components, costs, materials and time for production and finishing. With guidance from their lecturer and mentor about labour cost, mark-up and margin, students were able to calculate a fair retail price for their designs.

4. DISCUSSION

Outcomes as diverse as the students designing them included a rocking egg timer, a wooden and metal periscope that resembles Swiss cheese and an indoor washing line coat rack, complete with giant wooden pegs (Figure 6). Anecdotal evidence suggests students experienced a deeper engagement with this project due to the experimental approach, along with the contribution of a well-respected mentor. The exhibition added an aspirational outcome lifting the level of resolution of the work from object for academic assessment, to product for sale in the real world. Many of the final designs can be attributed to 'accidental learning' or discoveries made through experimentation during the initial materials, processes and context research phase of the assignment. Other solutions were the culmination of multiple small discoveries and breakthroughs discussed and reflected upon over small group critiques. Though intensive, the combination of an authentic learning approach delivered with experimental practice-based research, complete with expert mentoring, large formal and small informal critiques, can expedite the learning of intuition. Intensification of the curriculum to ensure important aspects of the discipline are not inexorably diluted is increasingly important as the role of the industrial designer expands.



Figure 6: Diverse responses to the assignment

REFERENCES:

- Brown, T. (2008). Design thinking. *Harvard Business Review*, June, 1 – 10.
- Cross, N. (2001). Designerly ways of knowing: Design discipline versus design science. *Design Issues*, 17(3), 49-55.
- Douglass, B., & Moustakas, C. (1985) Heuristic Inquiry: The Internal Search to Know. *Journal of Humanistic Psychology*. 25: 39-55.
- Kälviäinen, M. (2011). The Significance of 'Craft' Qualities in Creating Experiential Design Products. *The Design Journal*, 3(3), 4-15
- Norman, D. (2014). State of Design: How Design Education Must Change. Retrieved from: <https://www.linkedin.com/pulse/article/20140325102438-12181762-state-of-design-how-design-education-must-change?trk=mp-reader-card>
- Notar, C. E., D.R., & Padgett, S., Ms. (2010). IS THINK OUTSIDE THE BOX 21ST CENTURY CODE FOR IMAGINATION, INNOVATION, CREATIVITY, CRITICAL THINKING, INTUITION? *College Student Journal*, 44(2), 294-298. Retrieved from <http://ezproxy.aut.ac.nz/login?url=http://search.proquest.com/docview/366675479?accountid=8440>
- Reay, S. D., & Withell, A. J. (2013). Educating multidisciplinary postgraduate product design students: challenges for a new programme. In J. B. Reitan, P. Lloyd, E. Bohemia, L. M. Nielsen, I. Digranes, & E. Lutnaes (Eds.), *Design Learning for Tomorrow*. PO Box 4 St Olavs plass, 0130 Oslo, Norway: ABM-media. Retrieved from <http://www.abm-media.no/>
- Reeves, T., Heerington, J., & Oliver, R. (2002). Authentic activities and online learning Symposium conducted at the meeting of the *Annual Conference of Higher Education Research and Development Society of Australasia.*, Perth, Australia.
- Rule, A.C. (2006). The components of authentic learning. *Journal of Authentic Learning*. 3(1), 1-10.
- Withell, A., Cochrane, T., Reay, S., Gazioulusoy, I., & Inder, S. (2012). *Augmenting the design thinking studio*. presented at the meeting of the Ascilite 2012: Future Challenges, Sustainable Futures, Wellington.