

# Educating the ‘*Design Innovation Catalyst*’ for Change

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**Abstract:** Conventionally, design has played a compartmental role in the innovation process within most conservative companies around the world. Generally, companies have focused on the product design execution or the manufacturing and production arenas, and in some instances design is seen as merely a stylistic afterthought. Gradually, design is being regarded as a dynamic and central tactical business resource [9] and consequently organisations globally look to design to help them innovate, differentiate and compete in a changing economic climate. Considering this, the question is raised; how can the specific knowledge and skills of designers be better articulated, understood, implemented and valued as a core component of strategic innovation in businesses? In seeking to answer this question, this paper proposes the new frontier of the design profession coined the ‘*Design Innovation Catalyst*’. This paper outlines the role of the new design professional and discusses the subsequent implications for design education. Furthermore, questions surrounding how designers will develop these new capabilities and how the design led innovation framework in application can contribute to the future of design will also be presented. It is anticipated that the findings from this research will help to better equip designers to enable them to play a more central role in business and strategic innovation now and in the future.

**Key words:** *Design Education, Design Innovation Catalyst, Design Facilitation.*

## 1. Introduction

Interest surrounding how design can spur innovation has gained momentum in recent years through many business and innovation orientated publications. New concepts about the relationship and intersection between design, innovation and business have instead been developed in design practice, such as the concept of ‘*Design Thinking*’ [5, 6, 13]. The importance of design is marked through a different way of thinking, doing, and tackling problems from outside the box.

Business has recently begun to perceive design as the key to greater productivity, resulting in higher-value products and services, better processes, more effective marketing, simpler structures and a better use of people’s skills [11]. Design is viewed as more than just a niche market; but as one of the most persuasive processes for solving problems, ensuring long-term business sustainability and gaining competitive advantage. Consequently, design has increasingly become a vital and important strategic business footing that contributes to the success of innovation [9]. Demand for change within industry is evident, with many companies universally looking to design to help them transform, innovate, differentiate and vie in a global marketplace. Companies seek the benefits of

design such as; increased quality of goods and services, improved production flexibility and reduced material costs [8].

Australia's recent innovation performance has been uneven, and it has failed to keep pace with the rest of the world. In the last eight years, Australia has slipped from fifth to eighteenth in the World Economic Forum's Global Competitiveness Index. A decade of policy neglect has hurt Australia's innovation performance, making the country holistically less productive and competitive, thus reducing its ability to meet the needs and aspirations of Australian families and communities [23:2].

As Australia faces economic challenges and uncertainty, action is needed to strengthen the national economy by encouraging and driving businesses to compete beyond cost. Taking a leadership role to help combat the countries current failings is particularly important in order to better address the practical implications on how to better shape the countries businesses for the future. In order for Australia to become more competitive on the global stage it needs to look at design thinking as central to its innovation drive [12].

As previously reported [4] designers need to learn how to transition between designing products and designing business models in order to engage in this new era of design. Central to the relationship between design and business is the role of design led innovation. It is the belief of the author that design led innovation is positioned at the intersection of design, innovation and business, and thus serves as a viable and necessary tool in transitioning from artefacts to business model innovation [3]. This is not to say that all designers need to make this transition, rather that this new emerging field needs first to be addressed as a professional domain. The central aim of this paper is to contribute to a better understanding of what role design can play in the future of innovation and how to educate this new professional by way of required capabilities.

## **2. The Intersection of Design, Innovation and Business**

It has been documented previously by many authorities that design can help businesses innovate through processes like design led innovation and the generation of new business models [1, 2, 8, 7, 10, 14, 22, 24, 26, 27]. An important distinction of the design led innovation process, is that it is not only about problem solving approaches such as design thinking suggests, but it is a transformational process at the business (*not product*) level. The conservative role designers perform in the innovation process is slowly being challenged more and more and the new role they face requires further emphasis on the value design brings to an organisation through its strategy.

Martin [15, 16] has published widely on the relationship between design and business and asks the key question "*why business and design can't be friends?*" He makes clear that business is centred on reliability whilst design is focused on validity and it is this conflict between the two approaches that creates tension. Martin [16] also suggests the way to get along is to: appreciate the legitimate differences, empathise, seek to communicate on each other's terms, use tools both sides are familiar with and change comfort zones [19]. Building on Martins perspective by addressing the diffusion of innovations is Moore [18] who argues that there is a chasm between the early adopters of the product (the technology enthusiasts and visionaries) and the early majority (the pragmatists).

Specifically, Moore engages the distinction between visionaries and pragmatists is that they have very different expectations. He attempts to explore those differences and suggest techniques to successfully cross the "*chasm*", including choosing a target market, understanding the whole product concept, positioning the product, building a marketing strategy and choosing the most appropriate distribution channel and pricing. The future need and use

for design lies in the coupling of project and business levels through a holistic approach to all products, services and business models. This correlates with broader research trends that indicate design is moving away from a product centric approach and towards a method centred on business model innovation acumen.

### 3. Design Led Innovation Theory

The purpose of this previously published design led innovation framework [3] is to assist companies who have the desire to grow by utilising the strategic value of design within their business. As illustrated in Figure 1, this is achieved by embedding the strategic value of design within their businesses. The framework illustrates that within any business a fluctuating scale exists spanning operation and strategic activities, activities that have an internal and external focus. Diverse divisions within an organisation are consigned with these different activities and have specific targets, dependant on their functional role within the business. The framework uses the term ‘opportunity’ or ‘proposition’ as the pivotal aim, which marries all aspects of the organisation together. As the design concept matures, all aspects of the business are informed or have the ability to inform the opportunity, driving change and growth.

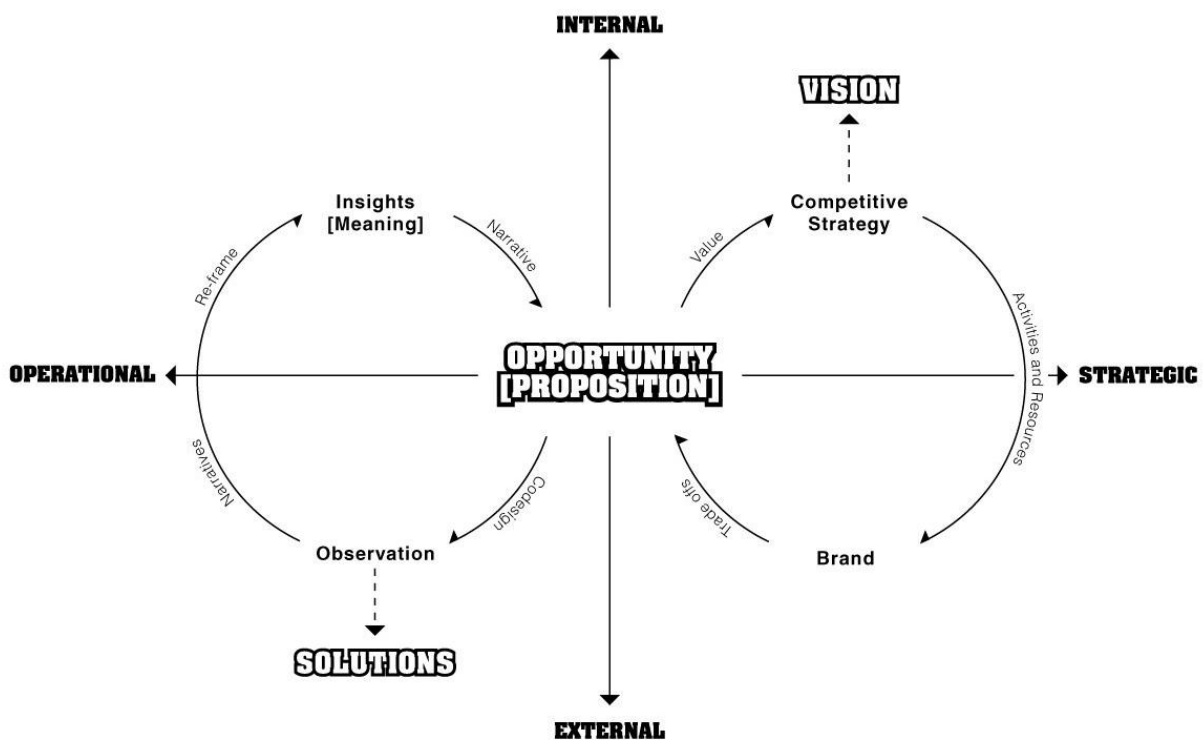


Figure 1 – The Design Led Framework

Bucolo and Matthews [3]

From the above design led innovation framework, it has been identified that there is an emergent role in the translation from the project to the business level. But who should facilitate this role? It is the proposition of this paper that the ‘*Design Innovation Catalyst*’ fulfils this role and how they do so will be discussed in the coming sections. This paper builds upon these insights and highlights the need for new organisational capability when adopting the design led innovation framework. The concept for the ‘*Design Innovation Catalyst*’ was first

introduced by Wrigley and Bucolo [25] and is influenced by Norman's [20] transitional engineer concept. Norman's [20] notion of "*transitional engineering*"—a third discipline inserted in the middle of business and design to translate between the abstractions of research and the realities of practice—may provide a solution. Described as *transitional developers*, these people act as translators, converting research from the design field into the language of business while also translating business into design problems for designers to then address.

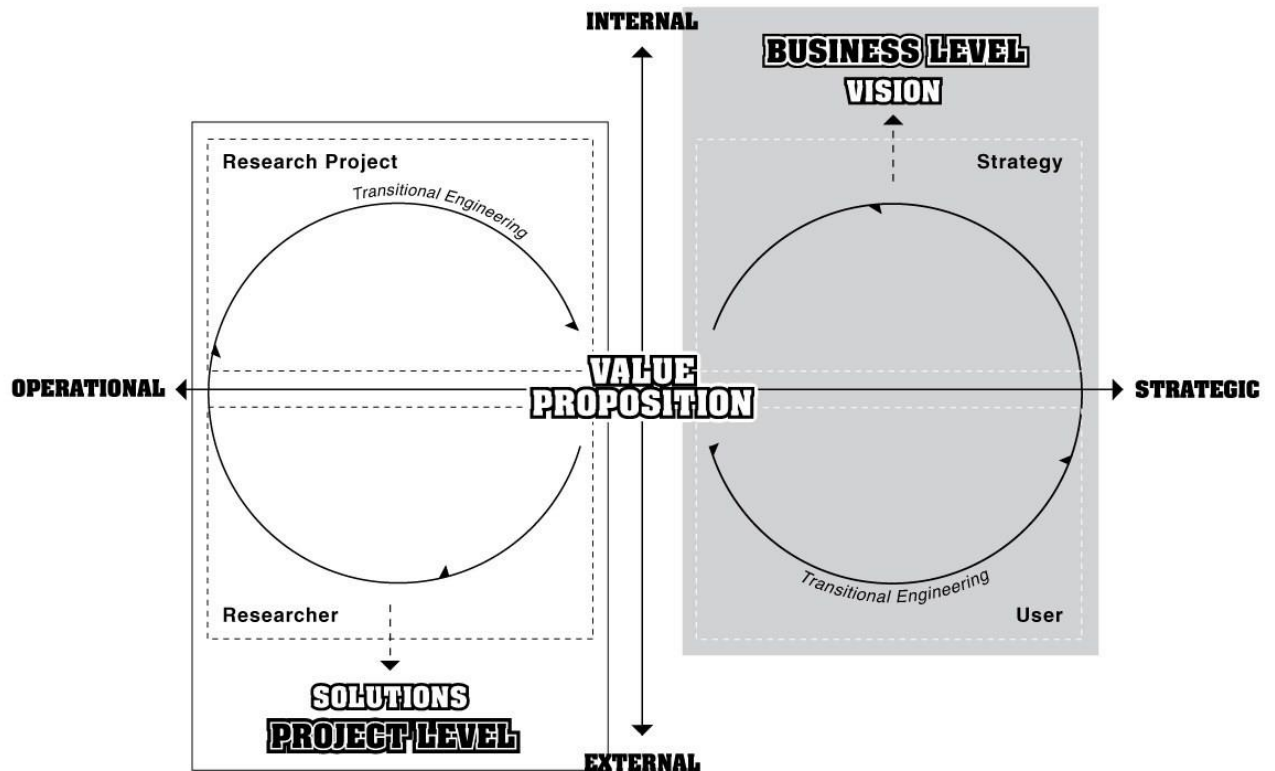


Figure 2 – The Transitional Engineer Framework  
Wrigley and Bucolo [25]

As illustrated in figure 2, both project and business levels are illustrated, representing the research and practice areas [21] as well as the design and business fields' respectively [16]. This means moving an idea from the researcher (*bottom left hand corner*) through the research project (*top left hand corner*) to the user (*bottom right hand corner*) then through to strategy (*top right hand corner*). It is this constant loop of conceptualisation back and forth between the parameters that creates real value for each stakeholder involved.

#### 4. The Design Innovation Catalyst

As illustrated in figure 3, the '*Design Innovation Catalyst*' translates and facilitates design observation, insight, meaning and strategy, into all facets of the organisation. In this role, the designer continuously instigates, challenges and disrupts innovation internally and externally from a position *within* the company. They do this whilst re-aligning and subsequently mapping these activities back to the strategy of the firm [25]. As previous companies who have undergone such a design led transformation suggest, this role cannot be delegated or

outsourced. It obligates a top down approach that must come from within. The engagement and involvement with many different internal and external stakeholders is vital to the design led innovation process, tied together by the ‘*Design Innovation Catalyst*’ who is always iteratively prototyping solutions against the central value proposition of the firm.

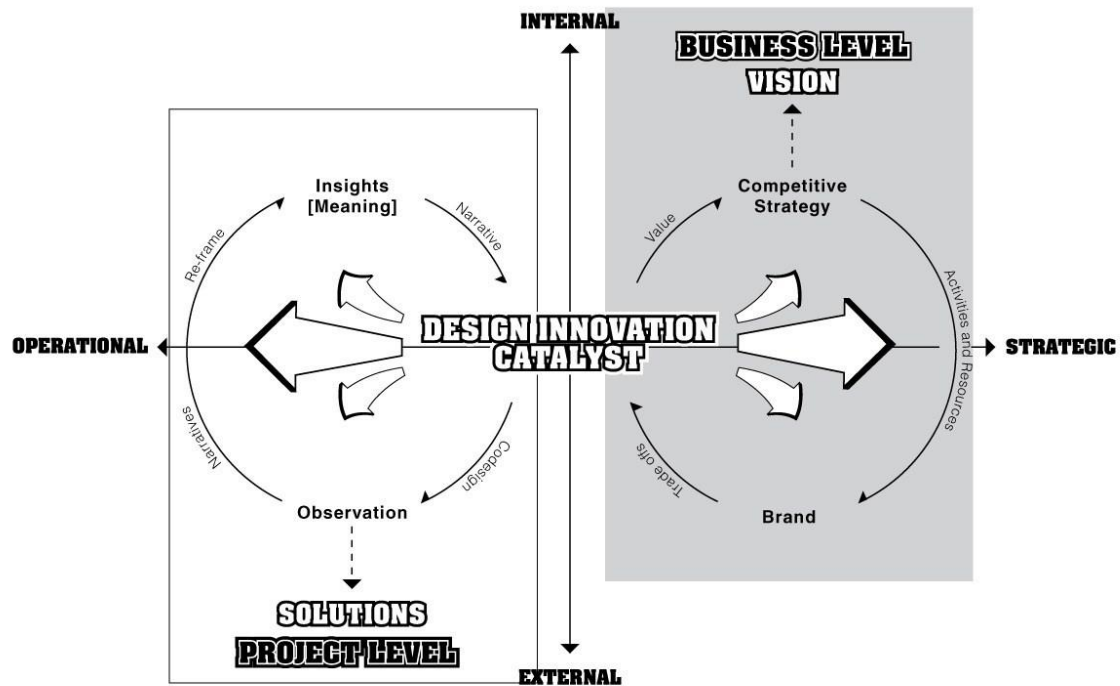


Figure 3 – Design Innovation Catalyst Framework  
Wrigley and Bucolo [25]

To facilitate such change, the ‘*Design Innovation Catalyst*’ must first learn the language of business and they must also be familiar with a business model that spans the design led innovation framework (Figure 1). They must have the ability to design around the organisational constraints and barriers while translating the language impediment that designers encounter when conversing with businesses and their needs. The visual language of design can assist in this communication as well as the delivery of tangible outcomes and additionally be used as a tool to facilitate a conversation between the two parties. This ‘facilitator’ needs to speak both languages along with the ability to unpack design expression whilst simultaneously working within the constraints of a business model.

## 5. Research Approach

A central aspect of this research approach was the ongoing developments of the aforementioned design led innovation framework, to better understand the value of design in business as previously reported [3, 25]. The new role that designers must undertake will be key in enabling the model to be adopted by business.

Using the lens of business, design and innovation the author has explored this approach by working with nine higher degree masters research students embedded in businesses. This involved engaging with the nine companies

across a variety of sectors and sizes to assist them in becoming design led, through the delivery of a long-term design intervention approach. Companies ranged in size from multinationals to small to medium sized enterprises (SMEs) over a twelve month period. Semi-structured interviews were conducted with the nine embedded masters students and the nine businesses independently then the interviews analysed thematically. Participants were asked to discuss their role and capabilities to fulfil that role as well as the perceived value both to the firm, the industry and University. The outcome of this process was new understandings of authentic business transformations and the role designers play within this process. This research approach has led to the development of the role requirements held by the '*Design Innovation Catalyst*', and the establishment of a new design led innovation embedded masters research program hosted at the Queensland University of Technology, Australia.

## **6. Capabilities of the Design Innovation Catalyst**

The following capabilities were derived from the embedded design led innovation masters research program, where interviews were conducted with the students and also with the businesses the students were embedded in. Therefore, the capabilities (*a combination of underlying skills, knowledge and abilities*) of this new '*Design Innovation Catalyst*' consist of the following:

- Design visualisation skills to enable communication between the various disciplines in a firm.
- Facilitation and implementation visually and verbally of the design led innovation tools and processes.
- Business knowledge and understanding; including but not exclusively; strategy, new product development, incremental to radical innovation, organisational change and entrepreneurial awareness.
- Conversant in the language and drivers of business, spanning all areas, levels and departments of a company.
- Ability to challenge the status quo and procedural processes within an organisation confidently.
- To think independently and originally.
- Ability to employ creative problem solving skills collectively.
- Capable of translating ideas from the abstract to the concrete world quickly using prototyping skills.
- Being able to re-frame problems spontaneously.
- Ability to map ideas with their underlying value propositions against the strategy of the firm.
- Are adaptable and capable of converging and diverging quickly and seamlessly on ideas.
- Ability to challenge the fundamental problems and constraints that are assumed by companies.
- Understands business process and modelling concepts in a variety of industries.
- Speaks from a position of authority on the design led process.
- Has a shared understanding and vision for growth and a true passion for the organisation.
- Belief in customer values and holds genuine emotional empathy for stakeholders of the business through the engagement process.
- Ability to stimulate, provoke, encourage, inspire and motivate others.
- Facilitate disruptive change internally from both a project and holistic view of the organisation.
- Presents a cheerful and enthusiastic persona as well as an authentic drive to learn.

- Ability to source rigorous relevant knowledge, to understand, synthesise and critique such findings into useful applications in the organisation.
- Facilitates engaging storytelling skills and the ability to emotionally connect to others through such stories.
- A belief and commitment to the design led innovation process over the outcome.
- To have and to hold an open mind through perpetual optimism and see every problem as a possible opportunity.
- Ability to investigate, gather, absorb and analysis data independently as well as collectively.
- Aptitude to generate results, reflect on findings and disseminate new knowledge accordingly in order to deliver strategic sustainable change through an organisation.
- Ability to prototype and experiment new business model concepts collaboratively with all stakeholders.

## 7. Value of the Design Innovation Catalyst

The perceived value delivered by the '*Design Innovation Catalyst*' in relation to the firm, the industry and academia respectively were described as knowledge disseminators, change catalysts and organisational culture reformists.

Students saw themselves as knowledge distributors in order to help companies stay relevant in uncertain economic times through the deployment of design led innovation. Where they felt they could illustrate and demonstrate the approach that would be piloted and dispersed productively amongst all employees of the firm. It was also felt that a deeper understanding of their customers was a large part of their value offering. All the students saw themselves as an internal valuable asset to the company (specialised knowledge, tools and processes) in their role as '*Design Innovation Catalysts*'.

An additional value was the ability to bring a unique resource to the firm by bridging the gap between industry and academia, allowing for more unbiased critical thinking to mature, whilst aiming to understand and translate the human complexity of the business. This was especially vital through the connecting and motivating separate departments of the organisation to work together to solve common and complex problems. Specialised offerings in empathising with their customers and understanding the future and latent needs of the prospective customer was particularly valued. Furthermore providing companies with more emotionally aware innovation tools, processes, and strategies enabled them to better connect with their customers through the use of deep customer insight processes was a valued component of their offering.

Another added value was the building, orchestrating, conducting and facilitating change carefully in a non-treating approach (as a research masters student not an employee) in which allowed for cultural shifts to occur and grow more naturally from within. By providing these new perspectives, frameworks and methodologies for innovation it postulated a value platform in which to leverage new business model designs and opportunities.

## 8. Educational Implications

Currently many new courses are being developed to assist in growing design thinking skills within business programs worldwide [17]. These programs as well as design driven courses need to be expanded to focus on the gaps in organisational capabilities (*a combination of underlying skills, knowledge and abilities*) identified in this paper. Tertiary institutions are well positioned to provide this new knowledge through practice based research

activities. This approach to learning enables the awareness and capability gap to be addressed in one activity. An example of such a program in action is the design led innovation research masters degree directed by the author at the Queensland University of Technology, Australia. The author manages an embedded masters research program that involves three stakeholders; the university, the industry and the masters student cohort. The program operates over a twelve-month period with the focus of this program being the '*embedded*' nature of the '*Design Innovation Catalyst*', placed in a firm to work on a specific pilot project within the business.

The program focuses on embedding tools and processes within an organisation and matching this with the design leadership qualities to enable companies to create breakthrough innovation and achieve sustained growth. The program provides a mechanism for embedded students to apply and gain knowledge of this approach through a yearlong collaborative journey with their peers.

The key objectives of the program:

- To explore the value of design led innovation inside embedded business practices.
- To pilot the adoption and of a design led innovation approach within a business through a specific project.
- To collectively contribute to the development of a learning community, to share common challenges and strategies to overcome the barriers to adoption of design led innovation within Australian businesses.

The outcome of this program results in new knowledge diffusion amongst the businesses as they absorb a design led approach through the selected project. Each week the students spend 3-4 days in the firm and 1-2 days in the design led innovation lab at the university. The design led innovation lab provides a space for firms to workshop ideas and projects collectively, host international expert guest speakers, test new tools, share leanings and explore new knowledge in theory through to industry application.

The difference between the more common internship program and the embedded masters cohort is that internships undertaken either as a component of an undergraduate degree, or shortly after graduation, typically involve utilising skills, techniques, and processes that are well understood and form part of '*business as usual*' for the prospective employer. In the case of the '*Design Innovation Catalyst*' embedded masters cohort, students apply design led innovation principles, uncovering the barriers and challenges companies face in becoming design led. Through their research, each student contributes their findings to this emerging discipline, and educates the company of how to successfully implement design led innovation within their corporate culture. Given the complex, interwoven nature of an organisation's culture, and the need to engage with employees at all levels within that firm (in order to uncover latent barriers to adoption), these projects require the well developed higher level research skills which postgraduate students possess.



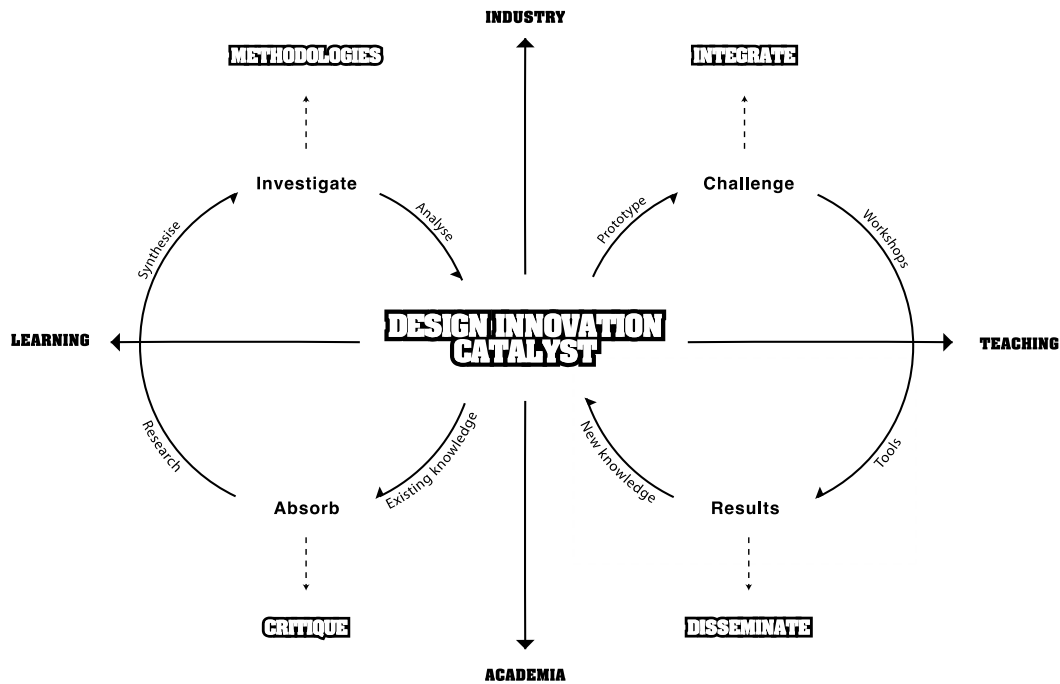


Figure 4 – Design Innovation Catalyst Educational Framework

The educational framework (as illustrated in figure 4), enabling the ‘*Design Innovation Catalyst*’ to understand and improve the business, requires the regular crossing of two chasms (axes) - learning-teaching and academia-industry. The frequency with which this role crosses the learning-teaching chasm forces the embedded individual to digest, reflect on, and understand imparted knowledge with similar regularity. Frequency is also an issue with regard to the industry-academia chasm, with industry’s need for the timely implementation of improvement initiatives seeming to conflict with academia’s requirement for the application of rigorous and methodical process in order to make valid contributions to the knowledge base.

The catalyst begins (bottom left corner) to learn within the university environment, by absorbing knowledge, discovering theories, and critiquing and questioning existing research. Within industry (top left corner) however, learning takes place through the investigation of specific, real world scenarios constituting the assigned project. Catalysts learn to analyse and synthesise data, in order to draw out valid, non-specific conclusions relevant to academia. When published, these findings contribute to the field of research (bottom right corner).

Within industry, teaching equates to presenting specific findings to the firm through running workshops and developing design led innovation tools. Early and continued stakeholder engagement and buy-in are essential, as by nature these findings seek to generate discussion, debate, and perhaps controversy, in order to challenge “the way it’s always been done”.

## 9. Summary

Australian organisations (particularly manufacturing) operate in a high input cost environment cutting costs, slashing jobs, or reducing quality of goods are common first response reactions to such a problem which can actually do more harm than good if an organisation does not understand what it is about their product the market

values, design led innovation allows businesses to better understand this value and to use design strategically to better position themselves in the marketplace. In all, this paper provides a new approach to the traditional role of design within businesses. This role has been coined the '*Design Innovation Catalyst*'. Further, how educators might envisage producing such an individual was proposed. Along with the capabilities a facilitator needs to embody and also education implications for such a role were explored. Questions were raised in regards to the transitional aspects of who could or should facilitate such a transformation within the design led framework. This paper concluded with the desirable capabilities and attributes of the '*Design Innovation Catalyst*' as well as introducing the new research program that seeks to embed these future design catalysts within businesses.

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