

Making it work; integrated academic practice

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This research presents a model of Integrated Academic Practice that allows the three aspects of the academic portfolio; Research, Education and External Engagement to work in harmony in Design education. It highlights the reciprocal values that benefit Academia, Students and Partners in project-based knowledge co-creation and sharing.

The research has been conducted through case-study review of a decade of activity conducted in undergraduate and postgraduate Design and Multidisciplinary Innovation programmes at one design-renowned UK University where up to 80% of the curriculum is delivered through collaborative projects with external partners.

It suggests that project-based activity with external partners can offer a situation that promotes high-quality, pedagogically sound, 'authentic' learning whilst offering a research site from which to gather data and in which to validate new knowledge. In order to achieve this, the author's recommend that projects are established with clear purpose in mind. The research demonstrates how each of the stakeholders (students, academia and external partners) can benefit from this integrated way of working.

The paper concludes by proposing the conditions necessary to make Integrated Academic Practice work in Design Higher Education.

Keywords: *Integrated Academic Practice; Partnership Projects*

Introduction

Design educators have long celebrated the value of the 'live' project with a 'real-world' client as a high point in their programmes. Indeed, the existence of such projects is often cited as the reason why students choose

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to study at one institution over another. The same educators also acknowledge that such projects place an additional burden on them when compared with running 'in-house' projects. With ever-increasing pressures on academics to respond to sector metrics associated with undertaking research, delivering impact and providing measurably high quality teaching, the barriers to working with external businesses are harder to ignore. Some academics are questioning whether these 'live' projects are a luxury that can no longer be afforded?

Many universities organise their activities through three distinct portfolios that, whilst given different names in different institutions, serve the same three functions; Education, Research and Engagement. Arguably, each is about delivering impact to society but through different channels;

- Education: equipping graduates with the knowledge, skills and creative confidence to bring about positive change
- Research: creating new knowledge with which to inform change through publication and application
- Engagement; working with external commercial, social and governmental organisations in order to develop the practice of the disciplines

In some disciplines these three portfolios of activity have evolved in a complementary fashion, the teaching hospital in which medical practitioners are educated whilst contributing to clinical research and simultaneously treating patients is the perfect example. Whilst creating organisational distinctions between portfolios of activity can still cause a certain silo mentality, in these more mature fields there is an irrefutable axiomatic complementarity.

Design academe is somewhat different. Since Frayling (1993) proposed his research 'into', 'by' and 'for' categorisation of design research, the discipline has struggled to disassociate the practice of design from 'research by design'. Friedman (2008) points out

In many situations, education and learning proceed by practising an art or craft. While we learn the art and craft of research by practising research, we do not undertake research simply by practising the art or craft to which the research field is linked.

This is important because, increasingly, academics need to be able to express the research value of their work simply to satisfy institutional (and in some instances contractual) requirements, let alone advance knowledge within their discipline. Having a clear model that allows them to understand

and articulate the interconnectedness of their tripartite academic role will, therefore, be advantageous.

The purpose of this research is to identify the conditions that support an Integrated Academic Practice (IAP) model that will allow academics to capitalise on their research interests for the benefit of their students (as co-researchers), and society beyond, in a way that is complimentary rather than burdensome.

Scope

This paper focuses on one design school and the knowledge and experience gained from reviewing over a decade of undergraduate and postgraduate industrial and innovation design studies. The context of the paper is bounded by the single geopolitical HE policies directing the individual University strategy within which the study was conducted. Nonetheless, the paper draws conclusions that are intended to provide design academics working within any context a set of enabling conditions intended to help them achieve individual and team-based Integrated Academic Practice.

Methodology

This study builds upon research previously conducted through post-rationalisation of a decade of university/business collaboration between Northumbria University and Unilever as described by Bailey et al(2015). Over 20 projects were analysed against a set of criteria designed to reveal chosen attributes of each project. In that study, autoethnographic enquiry was supported by semi-structured interview and reflective workshops. Knowledge gained from that study, along with subsequent in-studio student surveys, has been employed to help inform the creation of the IAP model proposed in this study.

Background

The site of this research, Northumbria University School of Design (hereafter NUSD), has an international reputation for the excellence of its teaching of design practice at undergraduate and postgraduate levels. It is also an acknowledged pioneer of multidisciplinary practice learning within design, and, between design, business, technology, and social science subjects. A characteristic of NUSD is the essential role that projects

(conducted between external partners, academics, and students) play in the curriculum.

NUSD plays host to the students with the highest academic points-score in their University and the brightest design students in their country. The academic team comes from different facets of design dealing with both theory and practice-based design research. In addition to the academic team, NUSD involves 'Innovators in Residence' (recent Masters Graduates who support the projects whilst being mentored by the University as they launch their own businesses) in their research and enterprise activities.

Pedagogy

The starting point of this work is education; delivering the highest quality design education through practice has been the 'core-business' of the NUSD since its foundations as one of the first UK Government Schools of Design in 1844 where

not theoretical instruction only, but the direct practical application of the Arts to Manufactures ought to be deemed an essential element.
(Yarrington et al, 2005)

Underpinning the School's approach is a pedagogy built on four elements that are all drawn together in the curriculum through design projects:

- Authentic practice

Establishing real-world authenticity is key to deep learning. Preparing students for the world of work, by exposing them to the complexities of professional situations is essential, but needs to happen within, what Bruner et al (1978), refer to as a 'scaffolded' environment. The foundation of the School's approach is project-based learning and teaching through design practice; directing undergraduates in the early years of their studies and progressively facilitating self-directed learning, through constructivist, experiential approaches as they develop and 'create their own knowledge' (Kolb 1984). This lays the foundations for their individual professional development. Setting projects as the central vehicle for learning and ensuring that they are conducted in a real-world context establishes the relevance of the learning to their future career aspirations thereby promoting amongst the students a desire to learn and understand.

- Cooperation

Design, in professional practice, is rarely a solo act and yet much traditional design education focuses on the individual. A more authentic approach, which is employed at NUSD, is based on students learning together in mixed-discipline project-based teams. Johnson & Johnson (1994) established five elements of cooperative learning. These are positive interdependence; individual accountability; face-to-face interaction; social skills; and processing. NUSD acknowledges this model through both the design of physical learning environments, programme structures, module structures, assessment design and project briefs that promote the development of these attributes. The result is that students establish trust between each other and, in the main, with their tutors and other support staff. This enables them to take creative risks knowing that those around them will be supportive.

Cooperative learning in design academe goes beyond the student-student interaction. We shall see later in this study that cooperative learning between academic, student and partner takes place when students are involved as co-creative researchers.

- Risk taking

Taking students out of their 'comfort zone' in a supported way, allows for deeper learning to be achieved. Traditional outcome-focused design education doesn't always promote this. Through a HEFCE funded pilot study (Bailey et al, 2010), it was established that students were more likely to 'play it safe' if the outcome of their design project was to be graded, whereas they were more experimental and took greater risks when the work was simply pass/fail. The higher education environment deters risk taking due to the high-stakes nature of summative assessment.

Based on the results of this pilot study, a 'safe' assessment-for-learning strategy intended to encourage creative risk-taking was developed and this is widely applied in NUSD, and in particular within the programmes where this study was situated. Using non-graded modules, at postgraduate level, each student presents a 'Portfolio of Practice' as an account of practice and a personal reflection of the learning derived from 'failure' and 'success' in that practice.

- *Reflection*

Design requires individuals who know their capabilities and have the capacity to nurture and access the different capabilities of others. Reflective Practice (Schönn, 1987) plays an important role in the development of self-awareness amongst design students, both in terms of their individual knowledge and capabilities but also in relation to how they work within teams.

The School's students develop as reflective practitioners who are involved as co-creators and active researchers in reflecting upon, evaluating and evolving new design and innovation methods employed in their programmes. Engaging students thus further develops their understanding and ownership (or construction) of their learning and their discipline (Bailey et al 2013).

Employing this pedagogy

These four pedagogic principles are the foundations upon which design learning at NUSD is built; learning from integrating theory and practice through projects in real-world situations, supported by reflection and an assessment strategy designed to promote learning, not simply grade performance.

For the vast majority of design students, we have found that the design project is the most effective vehicle for delivering this kind of integrated learning and the design brief is critical to this. Of around 300 final year undergraduate designers polled, only 4% reported looking beyond the project brief to other programme documentation. (Of that 4%, the majority had only consulted Module Descriptors or Guides when they had encountered a problem and wanted to challenge their grade! Only a tiny minority had done so to augment their learning). Organising the curriculum in such a way as to ensure that the theoretical as well as practical syllabus is addressed through a series of projects that borrow from 'scaffolding' theories and build knowledge suitably sequentially is a significant challenge in itself.

'Live' projects

Projects undertaken between student groups and external organisations are often referred to as 'live' projects. A 'live' project as defined by the LiveProjectsNetwork;

comprises the negotiation of a brief, timescale, budget, and product between an educational organisation, and an external collaborator for their mutual benefit. The project must be structured to ensure that students gain learning that is relevant to their educational development (Anderson & Priest, 2015).

Bailey et al (2015) conclude that "The live project is, in effect, an outcome-focused transactional project" and propose that projects undertaken through a partnership model working *with* collaborators offer greater potential to deliver true value to all stakeholders. Nonetheless, integrating the simple 'live' project into the curriculum with increasing pressures to deliver 'high quality' teaching and 'high quality' research (as measured through institutional and national surveys), is becoming too taxing for some academics; 'we just don't have the time anymore to deal with a contract, manage external expectations; we've got research and bureaucracy to deliver!'

But, we know that deep learning is achieved when what is being learned is authentic and relevant to the learners' future aspirations: of projects undertaken with external partners, students have said;

An invaluable learning experience that provided instant insight into industry expectations which raised my professional approach and business acumen. (Multidisciplinary Innovation graduate)

and

[it] stimulated me in the sense of having a good opportunity to practice for my future employment. (Industrial Design undergraduate)

Basics of Design Research

This paper is not about design research per se but it is important in the context of considering the role of the contemporary design academic to think about what may be achieved within a new model of practice.

Friedman (2008) points out that Frayling (1993) didn't really define what he meant by 'research by design' and that this has left the way open for a misinterpretation, by some, (as he sees it) of practice as research.

Within this context, practice-based design research (through project working) offers academics the opportunity to deliver real impact beyond theoretical knowledge creation (and the associated academic kudos achieved through publication). The application of emerging theory in practical situations working with external partners offers the opportunity to influence change, at scale, beyond academe.

Friedman draws attention to Nigel Cross's (1995) assertion that 'the best examples of design research are purposive, inquisitive, informed, methodical and communicable' and require 'articulate communication of explicit knowledge'. Irrespective of whether research is conducted into, by or for design, the purposeful pursuit of explicit, communicable new knowledge as the ultimate aim seems as relevant now as it was in 1995. When we consider an Integrated Academic Practice model then, this should be the priority for the Research dimension.

Partners on projects

We have shown that external engagement with relevant partners benefits student learning through providing an authentic, real-world situation and that it enhances their employability. Similarly, we recognise that applying new and emerging knowledge in real-world situations offers opportunities to gather data, validate findings and has the potential to deliver impact through adoption of new knowledge and practices. What of the third stakeholder, the partner organisation?

In previous research (Bailey et al 2015) we have revealed that the value of engagement for the client company increases as the relationship progresses from the transactional live project to that of a partnership relationship. At best, the live project delivers a high volume of 'fragile ideas' as stimuli for future exploration and access to potential new recruits; both valuable in their own way.

A partnership level project is more nuanced to support broader benefits to the company including developing new ways of working, and addressing more strategic and long-standing corporate questions as well as the topic of

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the brief. Some consider that issues of corporate strategy and how internal functions operate are beyond undergraduate students and too important to entrust to them. Of course they are if undertaken in isolation and unsupported. However, when partnership projects are structured to ensure that company employees, students and academics work together as co-creators of generative research, the results for the company can be dramatic;

The value for BA is that with Northumbria we are engaged in the development of new innovation practices. (Peter Cooke, Head of Design, British Airways)

The work that the team at Northumbria are doing to foster the multidisciplinary approach has delivered multiple benefits to the Mars team; we see this approach as being of high value to industry as it represents best practice in innovation. (Sue Wilson, former Global Head of Design, Mars Inc.)

This [Northumbria design-led approach] could be a new way of doing your business; it's creativity at it's core, and yes, once you have that you can innovate more scientifically (Pierre Starck, Unilever R&D - <https://vimeo.com/128358762>) (Bailey et al 2015)

In considering a model for Integrated Academic Practice, it seems wise to aim for the ultimate values that the partnership project has to offer the partner as identified in the aforementioned research (Bailey et al 2015), namely;

- Rapidity (generating data (ideas) very quickly);
- High Volume/High Quality (generating a large number of varied, high quality ideas)
- Compelling Communications (translating favourable ideas into compelling narratives for internal communication, discussion, development)
 - Co-creation (transforming ways of working and employee mind-set through direct engagement)
 - 'Beyond students' (establishing mechanisms for moving ideas beyond what students can achieve thereby extending the scope of research and potential impact of project)

Integrated Academic Practice model

How can we capitalise on this knowledge in order to establish a working model that allows us to deliver value to each stakeholder in equal measure and to balance the demands of the three academic portfolios? The key lies in making the project central to delivering the model, but understanding that it is simply a wrapper for pursuits within a bigger ecosystem of activity, and the wrapper may be perceived differently depending upon the focus of the viewer. Similarly, each sphere of activity requires different resources (human and physical) to ensure its success. (Fig.1)

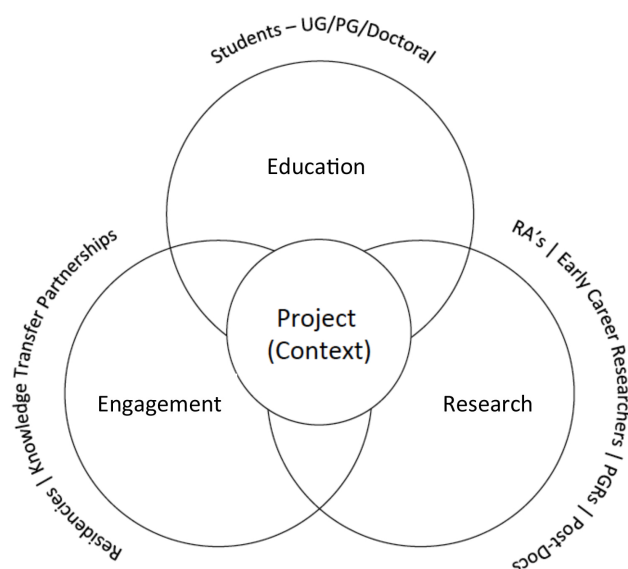


Fig. 1 – IAP model showing surrounding support resources

Education

From the design students' perspective we have seen that, underpinned by well considered pedagogy and a curriculum designed to facilitate project-based learning, projects are key. They package practice based application of theory into manageable chunks and, when undertaken with external

partners, reinforce the relevance of a design education in a professional, real-world situation. In order to maximise the potential for learning and the opportunity to achieve meaningful research through such projects, lead tutors need to be able to present the macro-view of the project; it's broader research aim and its true value to the partner organisation as well as ensuring that it delivers the critical curricular content that will enable students to achieve the prescribed learning outcomes. The rhythm of the project, as a design practice exercise, needs to be uninterrupted by the research and suitably supported to achieve this.

Research

Projects undertaken with collaborating partners and involving students as participant co-creators of generative research data offer academics a powerful resource. They facilitate a particular learning experience for students and partner organisations. However, in order to achieve meaningful research outcomes they need to be structured in a way that enables the lead researcher (who may also be the lead tutor) to answer the sort of specific, purposeful questions that Cross (1995) called for. And this purposeful research aim needs to be clearly articulated as part of the project discussion and contract negotiation in order that it can be appropriately resourced and valued.

Viewed from the research perspective, projects are often part of an on-going programme of research, rather than serving a single research purpose in their own right.

Engagement

It stands to reason that the project needs to be relevant to the business and of specific interest to the key personnel charged with overseeing its execution. However, there are numerous examples of disgruntled academics failing to understand why they haven't managed to impose their research upon businesses.

Historically, within the 'live project' approach, low-risk, 'back-burner' project topics are often selected for 'the student project'. This is entirely acceptable as far as it goes, but our research (Bailey et al 2013, 2015) shows that greater value, beyond the topic of the project, is achieved where the company stakeholders are more directly invested in the outcomes of the

project. A project of core strategic importance to a company will attract greater commitment and support from the partner. By this closer engagement (and co-creative involvement) partner employees will learn new ways of working and new ways of thinking about their situation. By positioning the project as an engagement with an academic community rather than as a 'student project' this can be reinforced.

Beyond the topic of the project, if the model is to work to its full potential, the partner needs to be fully invested in the value of the research enquiry. Indeed, their purpose in engaging with the institution in the first place may be to access research and new knowledge creation in order to help them answer key corporate questions, and projects offering students the opportunity to be part of that research may be of secondary concern. If the academics work with the business to understand their needs and co-create the research questions, they are almost guaranteed support.

At Northumbria, partners invariably find that the design outputs from students' projects far exceed their expectations. They also pose as many new questions as they answer and very rarely provide immediately implementable solutions. This can lead to a sense of dissatisfaction 'that was great, but what happens next?' As a university, Northumbria's purpose is not to translate students' ideas into commercial value for external partners through consultancy activity. However, establishing a mechanism that allows students and recent graduates to contribute to knowledge exchange and generative research in order to create actionable R&D strategy with partners is. To this end, Northumbria have established an Innovator in Residence (IiR) scheme that supports recent graduates to establish their own start-up businesses and work with academics and student groups to develop projects beyond their typical curricular conclusion. This IiR scheme becomes an important dimension in supporting the Engagement aspect of the IAP model.

Case Study

The following case study presents an anonymised example of how this model was employed in 2015/16 with one multinational corporation. It has been replicated with a number of different organisations of different scales and the conclusions drawn at the end of this paper are a synthesis taken from these multiple instances.

This example started with a meeting between two senior company representatives (a Vice President and a Director of one of the world's largest companies) and two senior academics. The topic under discussion was the disruption of a stagnant market for a particular brand of product that is sold worldwide. The company in question has sophisticated, long-established and global R+D functions and a roster of the world's finest design agencies working for them, any of whom could have been approached. Whilst the topic of discussion was about one particular brand and the product that it offers, the underlying question was a bigger one, discussed previously with the VP, and the reason why design academics and their students were being consulted; 'How can Design (as a function) help us to disrupt established brands/product archetypes in our business?' A previous project with a different part of the business had revealed the potential value of three particular aspects of Northumbria research that might help address this question; design-led multidisciplinary working, early co-creation with cross-functional stakeholders and a form of dynamic-mapping that one of the senior academics had been researching and developing. The new project was structured in order to employ all three of these aspects and to observe their effectiveness.

The response was constructed as a series of connected projects involving teams of undergraduate and postgraduate students together with the academics, Innovators in Residence (IiR) and key partner employees; collectively known as 'the team'. The project stages were constructed in order to take account of the levels and desired learning outcomes of the students involved, whilst enabling new knowledge about the topic and the bigger research questions to be developed.

In the first instance, the academics and IiR undertook an exercise to gather data about the market and product and to present this back to the partner as a visual taxonomy designed to sense-check their understanding and to act as the first stage in dynamic mapping. Based upon this taxonomy and the specific topic of the brief, 30 undergraduate industrial design students were introduced to the brief by the Director of the business together with the academics and the IiR. As part of the briefing, the students were engaged in an intensive workshop in order to elicit from them all of their collective tacit knowledge of the brand, market and product by means of problem-space tapestries (Bailey et al, 2013) – this

then fed into their establishing themes to address and teams in which to work.

The undergraduates worked through a series of staged activities supported by the team. They were able to present their emerging ideas regularly to the partner and work closely with the liR to incorporate feedback in order to refine proposals that fitted closely with the specific consumer and partner requirements. At the end of this project, and following an intensive review with the Director, the team translated all of the students' proposals onto a dynamic mapping tool. The tool was tailored specifically in order to evaluate the ideas against a series of criteria derived from the initial taxonomy and emerging issues drawn from the project as it progressed.

The dynamic mapping tool, itself the subject of one on-going research enquiry, acted as a facilitating tool for the others; multidisciplinary working and cross-functional co-creation. The team used it to engage partner employees from different business functions (R+D, business strategy, fundamental research, technology etc.) in a far-reaching, 2-day workshop that enabled different disciplines to work together to imagine new futures for the markets, brand and products. As well as achieving cross-functional buy-in to the project aims, this was a first stage in revealing different ways of working for some employees.

Building upon the co-created data generated from this mapping and sharing exercise, the subsequent project enabled the team to focus on more specific proposals and to work at greater depth. It was designed to engage both multidisciplinary postgraduate student groups as well as a small cohort of undergraduate interns working with the liR. This project looked much more strategically at the situation and enabled the team to engage with a broader commercial community within the business through presentations and further workshops.

These projects delivered far more than the original intention which was a product roadmap proposing a strategy for implementing disruption in the market (the answer to the question of the brief). The projects were used by the team to facilitate dialogue through workshops with other business functions whose roles would be directly impacted by the disruption of the market. Again, the purpose of these workshops was to drive new ways of

thinking and working in the business. In fact what they revealed was a need to work with these teams much earlier in projects in order to achieve their buy-in and understanding and benefit from their knowledge. Whilst this may seem obvious from the outside looking in, the core partner employees involved in the projects needed to experience this before this new way of working could be fully understood. Northumbria is now working with them to find ways to implement this knowledge in practice.

This suite of linked projects was particularly successful in delivering rich learning experiences for students and direct, topic-specific knowledge to the partner. In particular, the role of the liR in facilitating a professional and on-going engagement was especially valuable to both the partner and the academics in maintaining the aforementioned project rhythm.

But what did we learn that could have been better and can inform our IAP model? This case study reinforced the position that equality of commitment to the project, as indicated in previous research regarding the value of 'partnership projects' (Bailey et al 2015) is key to delivering sustained value. With hindsight, and the benefit of conducting the research that is presented in this paper, it is clear that more specifically articulated research questions at the outset would have enabled a more systematic approach that allowed the projects to progress unhindered, but facilitated the collection of more empirical data along the way. This in turn would have allowed the findings to be more clearly articulated to the partner and helped us advance knowledge more quickly within the organisation.

This reflection in no way undermines the value of the work undertaken which has been lauded within the company as being of the highest standard and of immense direct value. What it does do is lay the foundations for a more refined and integrated way of working next time around.

Conclusions

This research, conducted as it has been within one institution, cannot present definitive conclusions to be immediately transplanted into another institutional setting. It can, however present the enabling conditions that might promote opportunities for both individuals (at a project level) and teams of academics (at a departmental or institutional level) to adopt this sort of integrated practice in order to simultaneously develop knowledge for

their discipline, learning for their students and benefit to their partners whilst maintaining a manageable workload.

It is clear, and entirely appropriate, that individual academics within design, position themselves differently with regard to their bias between teaching, research and engagement. Similarly different projects will not always sit centrally between the three folios due to the bias of the academics involved and the topic being explored. (Fig. 2)

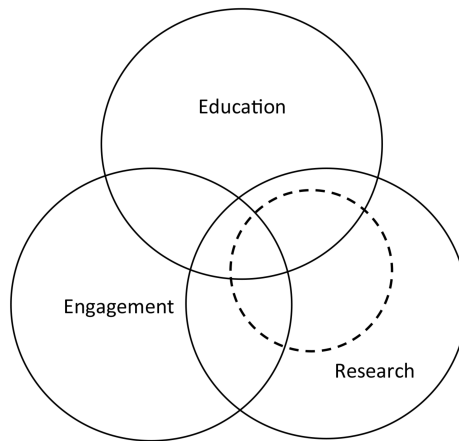


Fig. 2 IAP model illustrating a research-biased project in relation to other portfolios

What is important is that actors within a project are clear about where it sits and can adopt the relevant support and resources to secure success.

Enabling Conditions

From this research, we believe that the enabling conditions required to support an integrated approach to delivering success within each of the three portfolios thus:

- Sound Pedagogic underpinnings - a clear understanding of why, how and what students will learn through engaging with a project should be prioritised
 - Clarity;
 - of purpose; being explicit about the aims and objectives of the project from the outset and recognising its position relative to the three portfolios in order that all those involved are aligned with these
 - of communication; being explicit about the purposes of the project with each stakeholder group at the outset
 - of support; matching resource requirements (both internal & within the partner organisation and human & physical) to the declared purposes of the project
 - Relevance;
 - of educational value within the curriculum and relative to the syllabus
 - of research programme to the partner organisation; ensuring that the partner stands to gain from the new knowledge created as well as the topic explored
 - of context of the partnership; being sure that the partner shares the same perspective and values and represents a suitable learning and research site that will benefit students and society

Fundamental to ensuring that all of these conditions are recognised is the way in which the macro question to be addressed is expressed in the brief. For example, the following two questions can both result in a wide range of designs for new cups for the x-brand cup company:

- “What should the 2020 x-brand cup range look like?”
- “How can the function of Design change the way x-brand cups are designed for 2020?”

Both offer opportunities to research for and by design. The second question, however, also presents the opportunity to research into design as well. We have seen that involving students, in such enquiries into the role of their future profession is both motivating and empowering even at undergraduate level.

Perhaps, after all, it is not the classification of new knowledge in Design Research that is as important as the integrated nature of the knowledge in these projects that matters the most.

This research does not offer a silver bullet for design academics struggling with spiralling workloads and ambitions to serve three masters (or mistresses) at once. What it does do is present a means of visualising how, when considered as longer-term relationships rather than one-night-stands, apparently disparate activities might be aligned, married together, supported and, therefore, deliver results that are collectively more impactful than the sum of their parts.

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