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From user-centred to stakeholder-oriented service design: Implications for the role of service designers and their education based on an example from the public sector

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Abstract

This working paper reflects on an inquiry into a current service design practice, by sharing insights into the changing role of service designers and by outlining implications for service design education. It is based on ethnographic research with a public-sector service design agency. Observations suggest that service designers become increasingly concerned with and integrated into the organizational context that they try to change.

This paper then firstly gives a real-world example of the deep integration of service designers in a client organization, a council, it continues by describing the interactions and relationships that service designers have with this organization and then identifies potential for research and education by discussing these findings in relation to service design education using the example of product and service design courses at the Glasgow School of Art and discourses from literature.

KEYWORDS: service design, service design education

Introduction

The design field is evolving fast and continuously, opening up new perspectives for the profession. Service design is a good example of this dynamic, as it is a relatively young specialism within design that is constantly re-defining what designers do and how they do it; reshaping their engagement with clients, communities and citizens. An example of the shifting disciplinary boundaries are overlaps between e.g. Service Design and Transformation Design (see for example: (Sangiorgi, 2011) and other disciplines, such as policy (see, for

example: (Junginger, 2016). Design ventures into and overlaps with areas where it is not sufficient anymore to focus exclusively on the end user to ensure the provision of meaningful offers and their delivery. In addition, organisational stakeholders have become important recipients of design solutions as well. Further, the shift from design with users to design by users redefines the practice of designers and has implications for their education.

Such new design practices might be articulated and shared through research and publications, but they occur where design practitioners face challenges that require unique responses to elusive or evolving requirements. Novel approaches to design and their nuances are not always captured and communicated and, if so, often only with considerable delay. This research project aims to help bridge a gap between practice and academia, and here specifically education, by starting a dialogue that will help educators learn about the skill sets and attitudes that support novel practices.

We decided to submit a working paper to ServDes 2018, as we think this research can make a contribution to Track 1: Learning and Practicing. Since the analysis is still in progress, we see the conference as an ideal opportunity to put insights from the research, that took place in August 2017, to the community of scholars. We are looking forward to receive feedback at this early stage of the process to further direct and inform the analysis and findings. Thereby safeguarding any potential pitfalls that a more curtailed or protective approach to research might yield. We want to openly share this research to inform scholarly debate, hopefully inspire others and gain valuable critique from experts in the field. This paper is intended to provoke a discussion that will benefit scholars and support the development of service design education.

Theoretical Framework and Research Question

Setting the Frame for this Research

This research draws insights from a specific area of service design, the design of public services, which often involves the interaction with public sector bodies, such as local government councils, in the UK. In recent years, the design of public services has received growing attention from service design academics and practitioners (see for example: Bason, 2014; Junginger, 2016; Sangiorgi & Prendiville, 2017) with sub-disciplines of health care (Car, Sangiorgi, Büscher, Junginger, & Cooper, 2011; Cottam & Leadbeater, 2004; Jones, 2013), government (Bason, 2014; Thoelen et al., 2015) and communities or social innovation (Brown & Wyatt, 2010; Manzini, 2014; Koskinen & Hush, 2016). There are now a number of agencies that work with or for government, or have done so, such as Engine, FG, Government Digital Services and the InnovationUnit.

As described by Sangiorgi, Particio and Fisk (2017), the context for service design is increasingly becoming more complex, this is in parts due to the effect of technology on the operations of client organisations and the resulting increase in interactivity between stakeholder networks. Significant in this context and with regard to the evolution of design and the designer's role is the fact that the interaction between designers and organisations as stakeholders is becoming more profound, better understood and articulated (see for example the work of Sabine Junginger; Jelinek, Romme, & Boland, 2008; Michlewski, 2008). This has led to a growing body of research and literature that concerns itself with different aspects of the changing role of design in the face of deeper involvement with organisations on their various levels (such as operations, service provision, service procurement as well as decision-making and leadership). Building design capabilities within organisations has become an important focus for designers, as well as the adoption of design as a management principle for organisational innovation (Romme, 2003; Boland, Collopy, Lyytinen, & Yoo, 2008; Murphy, McLean, & Herfurth, 2015).

The research and literature described above further establish a shift in design that was initiated by the interpretation of design problems as wicked problems. The resulting articulation of an extended taxonomy of design artefacts in Buchanan's (2001) four orders of design or Krippendorff's 'trajectory of arteficiality' (Krippendorff, 2005) anticipated that the categories of subjects of design are being extended considerably – from signs and physical artefacts to systems, environments and discourses.

As a result, a shift in attention from previously dominant discussions around co-design and user engagement can be observed. As Herfurth (2016) suggests, the identified convergence between what people do when they design and when they organise leads to novel interpretations of the relationship between designers and their creation, resulting in a dynamic where the roles of the user and designer merge (Cottam & Leadbeater, 2004) and the creator-to-creation relationship becomes integral rather than separated.

At the same time, the professional understanding of designers has evolved from expert designers to those who acknowledge expertise of stakeholders and facilitate their contribution when tackling wicked problems. Manzini (2011) emphasises the continuing shift from linear processes to iterative and collaborative forms, and the turn towards service and systems.

The following indicators are a result of the above observations and summarise the development of the discipline for the purpose of this research:

- Dematerialization – referring to the shift away from physical artefacts and defined solutions to systemic and social contexts and wicked problems.

- Modes of inquiry: designers become part of the context they inquire into, they are not exclusively the ones who change the context, but are also affected by the inquiry and resulting changes. Modes of inquiry shift from distant and detached to immersed and interventionist.

- Post-disciplinarity: designers are not the ones who develop future solutions anymore, but propose conditions that allow stakeholders to articulate and realise preferred, but dynamic states.

- Design and organizational change: convergence of design and organizational theories. Interdisciplinarity as a result of post-disciplinarity. Collaborative, generalist, cross-disciplinary.

This background is important if we want to understand the character of changes that service design is undergoing. When considering the emphasis on user engagement as evident in concepts such as design thinking, the identified significance of design for organisations beyond user-engagement becomes relevant.

Research Question

The above articulated observations from research and literature make it relevant to consider the way that design is taught and the mechanisms and principles that are employed to convey experiential knowledge in design education.

Live projects and studio pedagogy have shaped design education over the past decades (Green & Bonollo, 2003) and are still employed today as an educational approach that acknowledges the experiential character of design knowledge and its often practice-based origins. It is practiced at design schools such as the Glasgow School of Art. At its core it can be described as a 'student-centred approach' (Tovey, 2015, p. 85) with elements such as peer-review, project briefs, dialogue and crits (ibid) all aimed at simulating the work practices of a specific community of practice (designers in this case) while maintaining the control of an academic institution over the curriculum.

In correspondence with the call for papers for Track 1 of ServDes2018, this research tries to shed light on to the evolving roles that service designers find themselves in contemporary practice. As established in the literature review, current literature and research is addressing the expansion of designers' engagement with organisational dimensions, such as capabilities and transformation (Saviranta & Eloranta, 2014), and the shifting landscape of design practices as more and more agencies and consultancies from management and digital sectors adopt service design methodologies and employ service designers. Where more detail and nuance in research and literature appears to be required is the synchronisation, or lack thereof, between the development and adaptation of service design in practice, its reflection and account in literature and research and the integration into teaching. From literature, it is not quite clear how information flows between practice, research and teaching, where the innovation of practice, research and teaching resides and how we as academics and educators can access this and maintain at the forefront of or at least keep up to date with evolving research and practice.

A question that arises then might be, to what degree design education has responded to such developments and how adequate the educational strategy of studio learning still is for a changed landscape of design, where evolving social interactions form a core element of what designers do and the way they solve problems or identify opportunities?

This paper responds to this question by exploring how practice, theory and education can better inform each other.

Methodology

Research Design – Longitudinal Observation and Semi-Structured Interviews

The research design of this study is inherently qualitative, freely taking advantage of the researcher's capacity to make sense and creatively, yet rigorously interpreting observed phenomena.

Although this research was led by an interest that got articulated prior to entering the field, it enquired into phenomena that are less explored and are assumed to be evolving – the practices of a specific design profession. Therefore, this research design represents a bricolage of a thematically defined interest in specific questions around evolving design practices, informed by literature and existing research, and the more exploratory character of grounded research. The exploration of phenomena in a dynamic situated context through the subjective, personal observation of the researcher have been described as potentially more adequate to generate deep insights than methods that limit the researcher to learn about the perception of others through i.e. statistical analysis or surveys (Mintzberg, 1979).

This inquiry sympathises with an ontological perspective that positions it within a nominalist paradigm, where reality is seen as constructed by individuals who make sense of the world by subjectively assigning labels to objects that surround them (Burrell & Morgan, 1979; O'Dowd, 2003; Suchman, 2007; Easterby-Smith, Thorpe, & Jackson, 2012). It is interested in a deep understanding of how meaning is created through people's experiences (Easterby-Smith et al., 2012), their behaviours and actions and builds on ideographic methodologies, assuming that the 'social world can only be understood by obtaining first-hand knowledge of the subject under investigation' (Burrell and Morgan, 1979, p. 5).

Methods Applied in the Field

Primary research consisted of a hybrid design that saw a three-week period of in-depth observation and shadowing of FutureGov (FG) combined and complemented by interviews with three other agencies that practice Service Design, although not in the public sector, but private, commercial sector.

The engagement with FG was from the beginning characterized by a transparent collaboration between FG and GSA. While research aims and objectives were communicated with FG for their review and agreement, to see whether they were comfortable to share the information requested, it was also the intention for GSA to learn about any questions that FG wanted answered or explore through this research collaboration.

In this respect, the research design was inclusive and collaborative, but doesn't qualify to be called participatory as the integration of research participants was too limited.

Methods utilized during the three-week engagement with FG are observations of project work, client meetings and presentations, internal meetings and crits, project groups, social events and project planning sessions with clients.

Field notes were a reliable means to capture reflective memos and initial analytical interpretations of observed phenomena. Specifically, in situations where the nature of interactions and conversations didn't allow for photo, video or audio recordings to capture observations, the field notes became a means of documentation as well. Extensive field notes are understood to contribute to the generation of 'rich data' from observation that provides a 'solid material for building a significant analysis' (Charmaz, 2006, p. 14).

The deeply collaborative character also permeated through to the interviews, which not only were semi-structured and partially open, but on occasions became conversations as participants reflected on their own experiences and became interested in what insights the researcher might provide to their areas of expertise.

The Role of the Researcher and his Attachment to the Research Context

Since the research collaboration often felt more like colleagues sharing their experiences rather than a researcher entering a closed community of practitioners, the researcher's role iteratively moved between observer as participant and observer as non-participant (Anderson, 2008).

As the researcher became more familiar with the research context and participants his role oscillated between a distant observer and a colleague, which allowed him to gain deeper insights and experiences of the research context through more informal interactions and conversations.

Preliminary Analysis – Triangulation and Sequenced Validation in the Field

Triangulating interviews with each other and with observations became an effective and situated routine for sense-making. Between interviews the researcher would reflect on previous information and continuously build theoretical sensitivity (Glaser, 1978) towards evolving patterns from interviews. Succeeding interviews were used to validate the researcher's understanding of patterns by slightly adapting the focus of interviews. This

revealed nuanced dimensions of phenomena and discrepancies in individuals' experiences and accounts as well as potential inconsistencies in the researcher's assumptions.

Saturation built up gradually while in the field and was supported by the conscious refinement of preliminary insights and their validity and relevance. Since the interviews were distributed over a three week period a routine was established that saw reflections on observations and interviews taking place approximately three times a week, after leaving the research context. This allowed for a continuous reflective element to be integrated into the ongoing primary research and in parallel supported interpretation towards preliminary analysis while still in the field.

The Research Participants

In total five projects were observed in varying depth. 15 semi-structured interviews with staff were conducted and extensive field notes were compiled. In addition, staff shared project reports, FG granted the researcher access to the agency's online data base of design methods and processes and included him in their various communication channels on *Slack* (a project management and communication platform).

Participants in the research were recruited from throughout the organization with an emphasis on service designers. The interviews included all organizational functions from the co-founder and management team to the service designers, design researchers and developers.

Case – FutureGov and the Essex Project

Introducing FutureGov

FutureGov is a public sector agency that works with local government. With 35 members of staff, it can be considered a larger agency. There are four wider professional foci that members of staff cover: service design, user experience design, organizational design, design research, product management and digital product development. FG has worked with around 100 local authorities in the UK, as well as government bodies in Australia, UAE, and Armenia, Macedonia, Georgia, Turkey.

Historically, FG started as an agency that drove change in local government by introducing digital technology. It was founded in 2008 and started to employ the first service designers in 2008. Early projects were on a small-scale innovation and change model, working with individual services to reshape their offering to citizens using digital and design tools. This moved on to a lab-based model, where teams from FG merge with teams in services, to work on research, design, testing and implementation together- staff members within the councils are being trained up and have experience of design and digital working methods, tools and techniques for future projects they may run. Working in a lab gave a concentrated space for new ideas to be allowed, for trial and training but also as an open space the invited other interested parties in - widening the pool of influenced people within the council. Current projects build lasting relationships with service teams, managers, senior staff and leadership teams in local councils, working together to establish goals and ambitions for the organisation and seeking out potential. This focuses attention towards switching mindsets, and seeing the interconnectedness of council services. It asks senior staff to move away from

seeing a council as a series of departments with annual reports and budgets, and start to see the whole service offering they should be making to their residents, and to their staff. What services are really there for, what they should be offering, how they should be approaching data and technology use, where they can work well with other services, and what that all means for the future shape and running of the organisation.

Service designers at FutureGov come from a variety of professional and educational backgrounds, and colleagues who create coded prototypes consider themselves designers as well. It asks all colleagues to be collaborative in their approach, to ask for feedback, share newly formed ideas for input and strengthen ideas post-testing with combined experience. FG's approach is to bring colleagues with different strengths together on a project, forming ideas together to ensure that all angles (design, technology, change) are tackled at once and are there from the start.

The Essex Project – Deep Integration in a Client Organisation

The Essex County Council Project is characterized by a traditional organisation seeking to bring about change on several levels. Working with frontline service staff; social workers understanding care needs of older individuals and their families in hospitals, care professionals visiting people settling back at home, drivers, staff members answering phones and helping parents of children with special educational needs arrange transport to school. FG also works with back office staff and team managers; those managing the finances for a service, IT teams building online forms and managing communications channels and managers with visions for the future of their services. As part of this project, FG joins up conversations of those who work within a service with senior leaders of the council, who are rarely exposed to user stories and outcomes.

The resulting relationships allow managers to own the future of their services, while senior leaders to act as networkers, helping to pull services closer together. In Essex County Council, the second largest council in England, FG have been working with staff to develop service redesigns, build internal digital delivery teams, advance the senior mind-set to one of collaboration, learning and sharing while work is in progress. FG is now seen as a digital partner, advising and encouraging the teams within the council in agile project management, user centred design methods, data management and technology procurement.

Councils in the UK are under great pressure to change and improve efficiency as austerity cuts impact on their funding and have consequences for the delivery of services. This backdrop is relevant when inquiring into the interaction between service designers and the client organization. Designers find themselves in not only difficult economic circumstances, but confronted with politically highly sensitive organisations. Essex council has a high ambition to save financial resources and the recent re-organisation of department heads as well as fear of job cuts has influenced the organizational mentality to a degree that incoming advisors are easily associated with measures that could have a negative effect on the individual employee.

During the research it became apparent that FG is aware of this situation and that this requires a sensitive approach to design interventions. Service designers need to be prepared to enter these workplaces, to understand how staff members are likely to react to their presence, to introduce their purpose clearly, to champion openness and honesty, make their work visible and share stories learned.

Findings

In the findings section we present insights from fieldwork, gained through observations, shadowing, interviews and participation in project work. They are a result of the initial cycle of analysis, as described above.

Co-Designing with Organisational Stakeholders, not End-Users Alone

During field research it became apparent that the engagement with end users of a service didn't appear to be the main focus of interactions and dedication of time resources. Although understanding the user and exploring the context in which a service operates and is interacted with forms still an important part of design research, it is the engagement with other stakeholders that we identified as significant. More immersive co-design processes with end-users weren't observed, and one member of staff at FG explained, client organisations regard co-design with users often as too resource intensive. Instead FG designers work closely and consistently with a variety of stakeholders throughout the design project. These stakeholders were members of councils, of specific units within a council or providers of services for the council. In this then, service design practice has become more stakeholder-oriented than actually user-centred. This was confirmed during an interview with the CEO of another, pioneering service design agency in the UK. In his view, client organisations have improved their internal knowledge about user-centred design and become adept at applying it. The challenge, as he puts it, is to bring user-centred design through the organisational structure while engaging with stakeholders along the way through co-design.

Deep Organisational Integration and Opportunistic Extension of Responsibilities

The designer-client relationship that was observed during the Essex project shows close collaboration beyond what is often referred to as an Innovation Lab. According to the project manager, who worked on the Essex project, the work with Essex council goes beyond that of an innovation lab, by integrating designers into everyday activities and the delivery of organisational change with a permanent base inside the organisation and access to decision makers. Such form of collaboration corresponds with current developments in the field (see for example: Sanders, 2014) and shows that deep structural integration of external designers in client organisations is a reality. Observations also suggests that designers confidently exploit opportunities to extend their responsibilities that arise therefrom, for example by developing business models or addressing issues of organisational change.

Interdisciplinary Contexts are Changing Service Design and the way Designers work

Observations and interviews suggest that FG represents a type of service design agency that was built around a specific disciplinary expertise other than design. They combine expert knowledge in local government with expertise in digitisation and service design. This allows

them to target specific clients and being able to apply specific background knowledge and expertise in relevant subject matters. Other examples are management consultancies, like Accenture who bought Fjord or digital agencies, such as Futurice, who adopted Service Design processes.

This can be interpreted as an extension of traditional design consultancy model that design thinking is based upon, where designers are generalists with expertise in problem-solving and problem-thinking. Further, process management approaches, specific to other disciplines, such as digital, shape designers' engagement with clients and the design process itself through, for example, agile work processes and tools. Also, team work at FG means collaboration across different disciplines (UX, service design, digital developers, project managers).

Designers as Organisers with Soft Skills

From observations it becomes evident that design as practiced by FG is highly dependent on individual team members with experiences in client engagement. and sensitivity towards organizational dimensions and dynamics becomes a main capability for graduate designers. This circumstance not only poses a barrier that is difficult to overcome for graduates, where agencies hire senior design staff, but is also a dilemma for agencies who try to find junior team members to support their senior staff, but also require each team member to take on senior roles.

This way of working together suggests a demise of account management, which leads to flat hierarchies, and results in the designers becoming more instrumental and involved in organizing around design projects and managing clients. This comes with a requirement of being confident 'to be the focal point of a project', as the Head of Design at FG describes the role of designers.

During this research, practitioners have voiced an expectation that familiarity with methods is a fundamental predisposition, what makes a designer a skilled service designer is the sensitivity for the context of application and the flexibility to think problem-oriented. For example the project manager on the Essex project would want to know from graduates: 'do you have empathy for organisations? Can you empathise with the client and their financial constraints? Are you fascinated by designing the conditions to be able to design user-centred?'

This focus on softer skills is potentially a barrier for fresh graduates when applying to agencies with flat, agile structures, as they will not have had the ability to experience professional contexts and develop client management skills.

But this also poses a challenge for education. It makes it harder to clearly identify, articulate and conceptualise learning outcomes that provide the basic and relevant knowledge and craftsmanship of service design and less clearly identifiable soft skills.

Diffusion of Design in Specialist Sectors

As design methods become accessible through digital platforms (see, for example: 'Practical Service Design') and are not exclusive to educational institutions, one might argue that in Schoen's (1992) sense, the resources of designing have become less situated, but the subject matter of design is becoming more specialised and unique. To a degree where agencies with specialist knowledge, such as FG, appear to have an advantage and enter the space of more generalist agencies, such as Engine, thereby raising questions as to whether design education has to respond to the diffusion of design in relation to sectors and related disciplines, such as policy or digital.

Implications for Design Pedagogy

To a certain degree, the rapid changes in design profession, one might argue, require a future-centric approach to design education itself, resembling what Manzini (2011) describes as ‘to prepare future (competent) designers is to involve students in problems, opportunities and design methods that today appear radically new (...)’, thereby establishing an abductive approach to the conception of pedagogy where students are active co-producers of their own learning (Orr, Yorke, & Blair, 2014, p. 32).

On the other hand we can witness a more pronounced focus on design research and the necessity to understand social and specialist contexts in order to identify the right problem (Norman, 2013).

As design branches out, it becomes exposed to processes not innate to design, such as agile, as well as specialism knowledge and expertise, which, one might argue, require a re-thinking of the structure of how we understand the role of designers and their education in preparation for evolving, but highly contextualised communities of practice. While studio-learning can be considered experience-led, the context of the learning experiences we as educators provide, might become ever more relevant. Here we wonder, whether the apprentice-master relationship in studio education has responded by simulating increasingly social and complex contexts, and the specialist knowledge that some sectors require.

From the above findings, we suggest that applying the studio and experience-centred model of action learning (Kolb, 1984) to a more stakeholder-centric form of design will require deeper engagement with the context of design, including organisations and their structures and cultures, not only on a Postgraduate level, but on an Undergraduate level as well in order to further the development of, for example, soft skills.

Preliminary Requirements for Stakeholder-Oriented Design Education

Below we deduct that an approach to service design education that respects the findings, has to acknowledge the relevance of the context that service designers operate in. And it is not always possible to anticipate the communities of practice that graduates will interact with in their practice. A good example of this is the finding that out of seven service designers at FG two had completed a service design degree. The extension of a user-centred design curriculum to embrace a wider range of stakeholders as intended audience for designing we see as an important requirement for future design education across BA and MA levels, but beyond this, findings inspired us to articulate a first draft of requirements for future design education.

Deducted requirements might read as follows:

Allow students to:

- develop curiosity for areas of the design ecology that might not occur apparently relevant to a service design task in a stricter sense;
- experience the complexities of working in interdisciplinary networks to strengthen the development of soft skills in addition to the experience of fundamental design methodology and practices;

- develop a repertoire or vocabulary that will allow to interact with other disciplines. Being able to communicate the benefit of design across stakeholder ecology;
- be versed in visual, communicative as well as analytical skills that allow to break down complexity and generate insights valuable and meaningful to a variety of stakeholders (not only users).
- Allow for experimentation and pro-active appropriation of specialist subject matters by design students by embracing social discourses as part of the realm of the artificial and understanding the role of products and services within.
- Shift in focus from learning through imitation of practice to a shift of emphasis towards development of a design attitude (Michlewski, 2008). Shaping of practice, rather than adopting traditions.

Potential Responses

The findings and articulation of preliminary requirements led us to suggest a first, limited collection of cases and suggestions that extend studio learning or have the potential to do so.

- Integration of specialism knowledge into the curriculum, creating a multi-disciplinary design course. Exposing students to thinking and empathy that comes with the convergence of disciplines through the integration of service-oriented projects and their multi-stakeholder ecologies.
- The extension of studio teaching with experiences of work life through internships, placements and live projects. Bringing education closer to the realities of work, without reducing the space for experimentation and self-exploration. An example is the intensified integration of live projects into the undergraduate curriculum at GSA.
- Collaborative courses with university faculties, such as business schools, examples being GSA's MSc in Design Innovation and International Management, together with Glasgow University or the MSc in Entrepreneurship for the Creative Industries with Audience Business School in Nantes, France. A limitation of this model can be that it doesn't necessarily result in a convergence of knowledge domains. Advantages are the experience and exposure to specialist knowledge from different, relevant disciplines.
- A model that exposes students to the practicalities of being design agents by interacting with clients, as well as members of their prospective communities of practice. This would bring the attitude of practicing designers into the studio, partially removing the complexity of practice, while still exposing students to a wider ecology of stakeholders and their respective experiences.

In this section, we made a first attempt at articulating potential implications for design education by articulating requirements and potential responses. These are not supposed to represent conclusive recommendations, they are instead intended to raise questions and explore opportunities and limitations of possibilities to evolve design education. It seems that specifically service design as discipline offers the opportunity to explore a wider stakeholder remit and allow students to experience multi-disciplinary ways of working.

Conclusions

In this paper we share our observations of service design practice and its context. We suggest that stakeholder-oriented design appears to be a more adequate term for design activities that increasingly involve users inside client and adjacent organisations. This has led to a shift away from a user-focused approach. This is not an entirely novel concept (see for example: Sanders, 2014, on co-design across the entire design process) but it requires explicit articulation in relation to design education and the way we prepare graduates for practice.

Three conclusions follow from this preliminary articulation of findings and their discussion. Through this research we became aware of the dynamic character with which practice explores and moves into new knowledge domains. Here we see a real opportunity for a proactive approach to design education that equips students with the ability to invent not only future user scenarios, but also future methodologies and situated ways of working as designer. Situated in a way that acknowledges the importance of context (Schön, 1992) and the uniqueness of design problems (Buchanan, 1992) as a result.

We acknowledge efforts to link the gap between teaching, practice and research by, for example, funding projects like this and suggest continued articulation and sharing of mechanisms and processes that further the integration of practice and research into teaching and learning.

It seems that we, as educators and practitioners, are on a journey and have started to address multi-disciplinary learning experiences and the simulation of live work environments. But identifying the value of these and making sense of such offers in relation to future practice is partially left with the students. Here we see potential for a more clearly articulated integration of stakeholder-oriented design into the curriculum to further narrow the gap between practice, research and learning.

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