Keeping it real: Student collaboration with industry

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Abstract

Project-based learning though industry collaboration provides a critical link between the real world and the academic environment. In learning institutions, students work on simulated assignment topics shielded from the real world refining their design skills. Working on live project briefs and partnership with industry clients allow students to put their knowledge into practice, and prepare for future employability. As students develop their project, they must consider two aspects of professional practice: design management and project management. This requires students to demonstrate their ability to consider a broader understanding of initiating and completing a project through an extensive application of project management skills. This paper examines the final year capstone unit, *Design Practices: Project*, where student teams collaborate with industry clients to deliver outcomes in the form of products and services. After reviewing the status-quo of the unit, projects challenges, lessons learned and students' feedback will be discussed.

Introduction

In a traditional learning context in higher education, design students learn to research a problem, explore alternatives, and defend their design outcome in terms of their thinking and design process. In the real world, designers deal with problems that are often complex in nature and that need to be addressed and communicated visually to a user group very often unlike themselves (Jones & VanPatter 2009). However, traditional classroom-based projects, in which topics are simulated and briefs are provided by teaching staff, are often insulated from reality and freighted with unrealistic requirements (Shneiderman et al. 2006). These projects heavily focus on the design-management processes of developing products or services lacking and fail to address the industry practice of working in partnership with stakeholders. Students function largely within a relatively homogeneous community of their peers and lecturers. This often leads self-referential thinking that neglects the cultural, individual and social dimensions of designing the product. This detached nature of university assignments prevents students from seeing the projects in a context of real-world and visualising users' interaction with their project often seen by students merely as assignments to earn them marks.

The academic-project unit is an attempt to address some of the issues that arise from the traditional classroom context of insulated and inauthentic design practice. Collaborating with industry clients, students are provided with the opportunity to participate in the development of a creative project located in an industry environment. This nature of the unit firmly focuses on students' engagement with a project-management process to plan, manage and execute a project to deliver a product or service.

Context

The industry project unit is a third-year capstone unit in the Bachelor of Design at an Australian university accommodating multiple majors including Animation, Games & Interactivity, Graphic Design, and Environmental & Spatial Design. The majority of students enrolled in this unit although from the Bachelor of Design, also includes majors from various disciplines such as Advertising, Film & Video, Public Relations, Photography and Visual Arts. The common disciplinary aspect amongst students is that they are interested in or planning to be engaged in professions of creative industries-based practice.

Industry clients and projects

Industry clients are recruited through the professional networks of the unit lecturers, advertisements through social networking websites, and direct contacts from industry clients. The clients are from various industries including large and small, not-for-profits and government organisations. The types of projects vary from discrete problems, which focus on product development, to complex problems involving changes to a system (i.e. service design) or the culture of an organisation (i.e. transformation design).

Ten to 15 industry projects are selected every year. To maintain the quality of teaching and learning aligned to the unit's learning outcomes and contribute our students' valuable skills and knowledge, the unit has a screening process for project selection. The design industry has changed drastically in recent years from a narrow focus on ornamental design to a much broader concept of value-driven design (Resnick 2016). The unit prioritises projects that allow students to practice a deeper engagement with a design process to inspire, ideate and implement their understanding of design to create values for stakeholders (i.e. product users, clients and the designer team). Clients are required to agree upon the ethos and the structure of the unit if they wish to collaborate with the students.

Project selection process

Industry projects are introduced to students in the first week of semester and students select a project based on their discipline area and skill sets. Students are required to complete a project preference form to:

- indicate their preferred projects;
- indicate role(s) they wish to perform as a team member;
- describe their previous projects/assignments; and
- list technical skills.

The purpose of this screening process is to allow students to choose a project to complement their discipline skills and put their previous learning into industry-level practice. The process is also to ensure that a team is formed with a balanced skill sets for projects.

Project management processes

Project-oriented process

The unit focuses on extensive application of project management following an integrated approach to manage design and project-oriented processes based on the five process groups outlined in the Project Management Institute's Project Management Body of Knowledge (PMBOK) (Marchewka 2012):

- Initiating: development of business case
- Planning: planning of entire project (e.g. scope, resources, cost, schedule)
- Executing: carrying out the planned activities
- Monitoring and controlling: managing and measuring progress
- Closing: verifying all deliverables are satisfactorily completed

Following the project management process, students are required to address the following nine areas: scope, time, cost, quality, procurement, human resources, communications, risk management and stakeholder management. This is to ensure that students work strategically through the challenging ambiguity of real-world project problems and working with clients.

An online project management application, Asana, is used to track, monitor and report the project progress. It is the project manager's responsibility to set up a project account to list the team's agreed- upon work breakdown structure (WBS), enumerating and allocating tasks and the associated components such as the task assignees, due dates, and deliverables. Each student in a team is then required to visit Asana regularly to track and record their task progress by leaving comments and uploading evidence of their activities (e.g. documents, media files). The following screen grab shows an example of project management and task tracking in Asana:
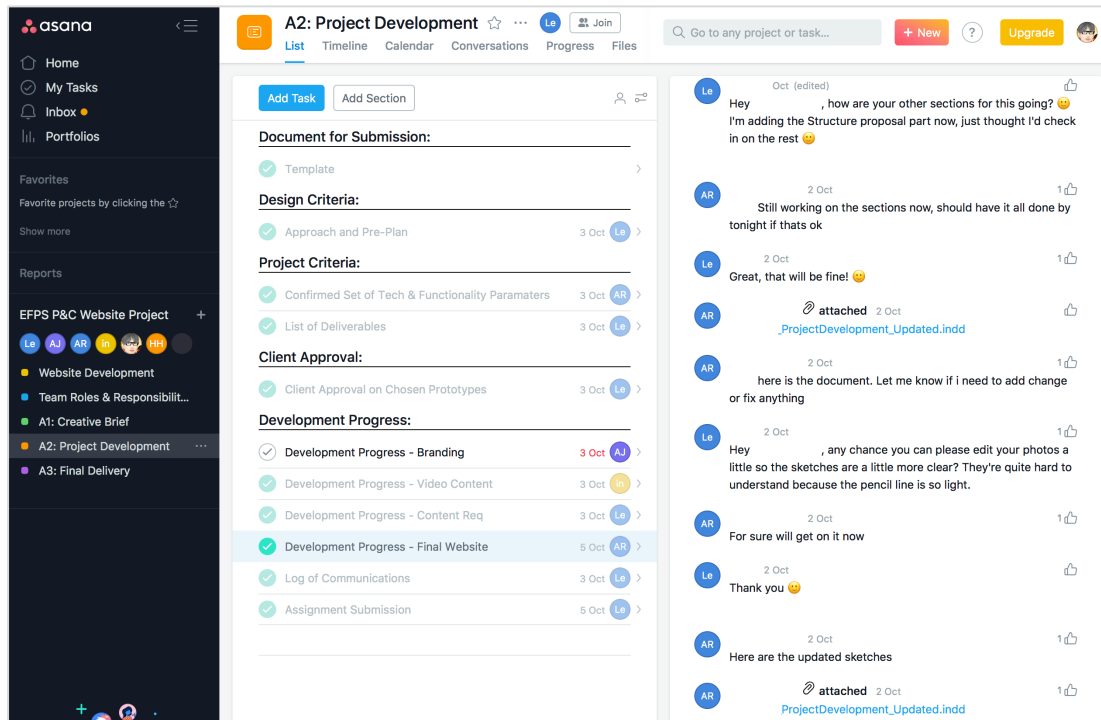
Figure 1: Screen grab of Asana from a 2018 student project

Design-oriented process

The Double Diamond design process (Design Council 2018) is used in the unit to guide students' product development process. The Double Diamond model involves a four-stage design framework including: Discover, Define, Develop, Deliver phases. The assessment points and structure of the unit are organised to align with the Double Diamond process. The main objective is to provide a systematic framework to assist students' design practice and to guide their design outcomes while they learn project management processes within a group setting, alongside client management (Stone 2010). The Double Diamond model provides a four-stage design framework covering Discover, Define, Develop, Deliver phases. This model was selected as it is a consolidated design process, embodying the merits of a number of popular design processes supporting the diversity of projects involved in the unit.
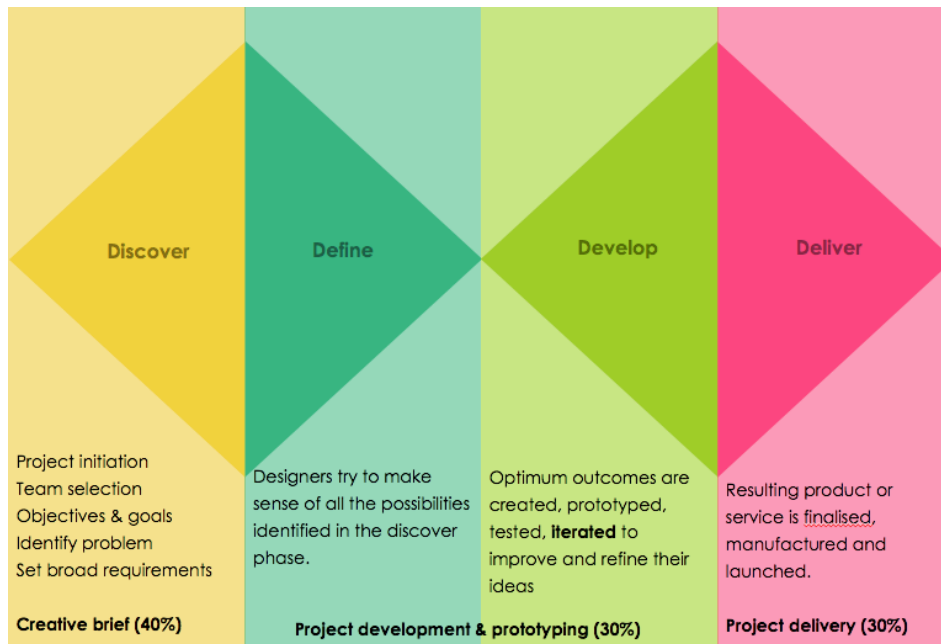
Figure 2: The assessment points and structure of the industry project unit

Project challenges

Many of the previous studies on university-industry collaboration discussed the merits and mutual benefits gained by academia and businesses (Ankrah & AL-Tabbaa 2015; Chandrasekran, et. al. 2013; Shin, Lee, & Jung 2013; Roberts, 2007; Vavreck 2002). However, barriers and challenges associated in these collaborations are seldomly reviewed extensively. A few studies reported similar elements of challenges to collaboration including:

- Different incentives and conflicts between public and private knowledge (Bruneel, D'Este, & Salter 2010)
- Conflicts over intellectual property (Bruneel, D'Este & Salter 2010; Vere 2008); and
- Students' pressure on working on industry projects (e.g. pressure on meeting the expectation of clients, complexity of real-world problem) (Marcketto & Karpova 2014; Vere 2008).

Similarly, this study shares some of the findings of the previous studies. There were three recurring challenges observed in the unit, and they were:

- conflicts of expectations between students and clients;
- emotional stress and pressure on students; and
- disinterest in project management.

Conflicts of expectations between students and clients

Over the years, the perception of industry clients towards university projects and working with students have changed. More clients appreciate the opportunity to innovate their products and service by harnessing students' creativity through knowledge exchange. However, it is still an ongoing concern that some clients consider university-industry collaborations as a means of reducing financial stress of their business; or a way to complete time-consuming and labour-intensive tasks. The live nature of the projects and direct involvement of clients as an active participant often alter the original brief and scope of the projects. This sometimes resulted in clients demanding students to work on small and insignificant parts of a whole project (e.g. data/content entry for an online magazine); or instructing students to develop specific product or service omitting the crucial phase of design research. In turn, preventing students from gaining the valuable experiences of working with industry clients as design professionals – exercising their creativity, a holistic approach to solve design problems, and managing a project.

Emotional stress and pressure on students

The project-based learning in a team environment and involvement of industry clients proved to be a challenge for some students. Involving clients throughout the design process is not merely a monitoring activity; they play an active stakeholder role in collaborating with students and provide an alternative channel of feedback for project outcomes. Some students leverage their client involvement and feedback to motivate their project management skills and professionalism. However, some indicated that the pressure of working with industry clients was greater than they expected and emotionally stressful.

Disinterest in project management

Similar previous studies rarely discuss the extent and application of project management in their university-industry collaborations. In the authors' industry project unit, students are introduced to project management for the first time, strictly following the PMBOK's project management system. Some students were overwhelmed by the unfamiliar territory of project management. Some students described project management to be unappealing and tedious, expressing their preference to spend more time on 'design-making' and developing products and services for clients. In particular, many students were overwhelmed by the management of two processes involved in the unit: i.e. the project-oriented and design-oriented processes. It seems that students understood the overarching concept of project management and design-oriented process located within the project management as a part of its component. However, some failed to execute their understanding in practice,

especially at the beginning of project management planning where students are required to develop work breakdown structure (WBS).

Project benefits & Student feedback

The benefits of project-based learning and university-industry collaboration are well documented in many studies (e.g. Ankrah & AL-Tabbaa 2015; Bosley 1995; Marcketti & Karpova, 2014; Rajibussalim, Sahama, & Pillay 2016) and one of the key benefits is the opportunity for students to work on projects situated in a real-world context and their interaction with industry clients and stakeholders. The key benefit of industry collaboration is that it positively encourages students to invest greater effort and motivates to deliver quality outcomes (Marcketti & Karpova, 2014).

Feedback from students in the authors' industry project unit noted that industry-based projects helped them to prepare for the future and their career development. The majority of students reported the following aspects of the unit to be beneficial to their learning:

- having industry experience before completing their degree;
- practising a project management process including teamwork;
- improving employability; and
- receiving feedback and collaborating with real clients.

This is evidenced in student surveys between 2015 and 2018):

'This is a full on [sic] unit that really challenged my thinking. I am completely exhausted after it but I am very happy with our outcome' (survey response from a student in 2015)

'It was challenging in a good way - helpful to have a unit that teaches the actual navigation of working with clients and provides an opportunity to do so in a relatively safe environment' (survey response from a student in 2017)

Students also indicated that the unit provided them an opportunity to discover and test their strengths, and identify weaknesses to further improve their employability:

'Pushing myself to learn new techniques and technology for the particualr [sic] project I was working on. Also the potential for networking is good' (survey response from a student in 2016)

While the opportunity to work with industry clients on a live project is the main attraction of the unit, a series of surveys shows interesting recurring feedback that students enjoyed group work and they appreciated the process of team building to complete the project.

'Learning to work with a team, organising and communicating between each other' (survey response from a student in 2015)

'Team building and co-ordination was probably the best part of this unit' (survey response from a student in 2016)

'Working together with other creatives who are just as passionate about the project as you are' (survey response from a student in 2017)

As noted earlier, some students indicated their heightened level of stress involving clients and pressure to meet the expectations of clients. However, some students noted that they appreciated the involvement of clients, in particular, feedback they received from clients. While the lecturers provide formative and summative assessment feedback as a means of formal evaluation of their work and the assessment marks act as a currency and benchmark; clients provided professional guidance for students to improve their industry-specific skills and transferrable skills such as communication. This is evidenced in one of clients' email in 2018 (An industry client, pers.comm., 31 October):

> Thank you so much for the opportunity given to me for work on my project. The students did a fantastic job and the results far exceeded my expectations. It's obvious the lecturing of this unit has been very successful in teaching students to understand the value of effective communication when working on a project. The outcomes were indicative of their hard work. It's been a pleasure to work with yourself and the students over the past six months and thank you again Jo for the opportunity.

Summary and conclusion

Working on a real-world project within the boundary of learning institution provides students the opportunity to safely practice industry standard project management and put their design processes into practice. The dynamics of collaborative design in an industry setting provides an authentic context for students to make a transition from insulated design practice to future professional practice. The results of university-industry collaboration indicated that the nature of industry-projects involving clients and management of multiple process overwhelmed some students and causes emotional stress.

There were also benefits for students to appreciate the self-reflective process of understanding their own skill sets and prepare for their future employability. Students also indicated that they enjoyed the group work through project management which will help them to prepare for real world interdisciplinary collaboration.

The findings of this study also have benefits for other stakeholders, including teaching staff and the wider university, in facilitating the collaboration of university-industry projects. The interaction with industry clients and feedback from them, allows students to gain access to a different mode of learning, which they cannot experience in traditional classroom-based activities. Industry projects as an assessment provides students with alternative means of obtaining feedback about their work in real-world contexts. In turn, the lecturers play a number of different facilitation roles including, mediator, supporter, advisor, and mentor.

University-industry collaborations have mutual benefits for both parties: students have an opportunity to work on live industry projects, and clients receive a product or service in return. It also allows teaching staff to assess industry demands and devise authentic assessments in the course to ensure the currency of the curriculum.

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