
Distilling Software Engineering

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Providing a realistic project experience is an important requirement of the second year Software Engineering course at Otago Polytechnic. Using an Agile Methodology (Mann & Smith, 2007), students work in groups of three or four to complete a project for a real client. The course focus is on the process of engaging with the client and making good use of the Agile toolkit to produce a demonstrable product or prototype.

One of the challenges in this course over the years has been the client commitment required for the class project. The obvious benefits of a single client are the consistent messages provided to students and the ease of generalising lessons learned across the class. However, if a single client is used, the project requires a significant time commitment for client meetings, email communication and class presentations.

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Prior to the 2010 iteration of this course, a conversation at the 2010 CITRENZ conference presented a great opportunity to expose students to real life agile development opportunities. Jason Leong is one of the co-founder of *The Distiller* group, a Dunedin based cluster of IT startup companies. Distiller describe themselves as "It is an exercise in social entrepreneurship. It is a non-profit organisation. It is a cluster designed by technopreneurs, for technopreneurs." Twelve members of the group were delighted to have a group of 45 second year students to work with and a 'speed-dating' event was quickly established to match students with possible projects.

Initial meetings with the Distiller team were held to clarify the students' involvement and to establish some ground rules around course checkpoints and processes. The projects, which were at various stages of development at the start of the semester, included: developing a parking solution for the university; exploring the provision of online teaching resources for secondary teachers; Room4Rent – a variation on the couchsurfing model; implementation of an intranet for the Distiller group. Students were involved in all stages of the different projects, from concept development through design and coding to re-engineering of existing products.

What worked well? The students were working in a live environment. They needed to meet external deadlines for the clients as well as their academic deadlines (at times these were modified to align the

dates). They arranged their own client meetings and feedback sessions. Professional standards of work were expected at all times in the client environment. Groups needed to closely manage their own project plans to align with both client and class expectations.

Challenges: Managing twelve simultaneous external projects with second year students, some of whom are only in their first semester of second year, was a significant effort. The range of student skills meant that some groups were not able to meet the client expectations and needed support in managing this with the client. Some clients were looking for code monkeys who could implement their projects and some had very high expectations of the students' skill levels. Several groups were instructed to use a new language to implement the project and spent weeks trying to learn to code in that environment, Ruby-on-rails or Silverstripe, for example.

Several groups selected the same client – a charismatic person who took on four groups. This client had many project ideas but none of these groups managed to confirm requirements with him – he was always moving on to the next great idea. This posed huge challenges to these groups and resulted in three groups changing clients late in the semester, fortunately superbly managed by the Distiller team. The group who stayed with this client, however, felt that they learned good client management skills from the experience, skills they will take with them into 3rd year project.

"However I think our group's best achievements are sticking with a difficult client and project whose objectives a lot of the time where [sic] very vague. I feel that I learnt so much from working on a real project with a real client teaching me good people skills

and giving me real world experience." Student A, reflective review

"I think we learnt a lot about dealing with a client, which I will take with me into all future projects. I think it will help greatly knowing what it's like to deal with a client who doesn't have the greatest idea of what they want, which can put a lot of stress on any project. Knowing now how to deal with that scenario could help the success of my future projects." Student B, reflective review

Benefits overall: The experience of being involved in the incubator and the variety of projects provided enormous benefits to the students, many of whom thrived in the dynamic 'pressure cooker' environment. They learned the ability of the agile methodologies to embrace the many changes they encountered over the 16 weeks. Students were much more engaged with each other's projects than in previous years due to regular class scrum meetings, testing and formal presentations, and were able to contribute well to problem solving for other groups' work.

In conclusion: The multiple projects from the different technoprenurial businesses at *The Distiller* provided an intense real-world experience. The unique environment proved an effective way of learning software engineering and provided a way of engaging students in entrepreneurial activity- an often overlooked aspect of work readiness.

Mann, S. and L. Smith (2006). Arriving at an agile framework for teaching software engineering. 19th Annual Conference of the National Advisory Committee on Computing Qualifications, Wellington, New Zealand, NACCQ in cooperation with ACM SIGCSE. 183-190