
Embedding the CHI Student Design Competition into Project-Based Learning

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Abstract

In this paper we report a project-based learning approach to the teaching of User-Centered Design (UCD). We describe the alignment of the learning outcomes, learning and teaching activities and the assessment for the module, and discuss the advantages of embedding the CHI Student Design Competition brief in the module.

Introduction

The teaching of user-centred design on the MSc in Human-Computer Interaction with Ergonomics at University College London has undergone a number of changes as different members of staff have joined the team. Whilst the topics covered and the number of hours of teaching have remained static over time, the way in which the module has been assessed has evolved over time.

In recent years we have decided to move away from an individual essay-based assessment towards one in which students had to collaborate whilst applying newly learnt tools and techniques to a novel design problem. This new approach to the teaching and assessment of the module embodies a constructivist project-based

learning approach [1]. In this paper short paper we reflect on the benefits that this change in assessment has had to the student learning experience at UCL.

The 'Design Practice' Module at UCL

The module is one eighth of the taught part of the master's degree and is conducted in term 1. It runs over 8 weeks in October and November each year and recruits up to 50 students. The module is structured around a design project with a series of lectures that provide guidance on the activities that should be undertaken.

Design Project

The project requires students to work as part of a small team to address a novel interactive design problem. During the project, students should apply knowledge acquired during the taught component of the module. This consists of 8 weeks of lectures that cover the main stages of the user centred design process. In addition to the lectures, the students engage in design activities during lab sessions each week. Teams are expected to dedicate at least 18 hours of independent time to their project outside of class time

Design Brief

Working as a part of a small team, students are required to design an object, interface, or system that meets the demands of the CHI student design competition brief e.g. <http://chi2012.acm.org/cfp-studentdesign.shtml>. To do this, students need to apply appropriate methods to understand the problem space, and develop a user-centered design solution that supports, assists, enhances or otherwise benefits the target audience.

The first major challenge that teams face on this project is thinking about the target user group and how they are to refine the broad open-ended design problem that they have been given into something more concrete and actionable. This process of refining and refocusing on a more specific design problem to be solved is a critical component of the design brief.

As the project progresses, teams must conduct appropriate research to understand the research problem that they have framed and develop ideas that meet their core user groups needs. Groups' are introduced to a variety of wire framing and rapid prototyping tools so support rapid iteration from concept sketches to early functional prototypes; a critical component of getting the design right [2]. Evaluation is encouraged at all stages of this process so that teams get a sense of what is working and what is not. This is a view that is strongly advocated for adopting a user-centered design process [3].

By the end of the project, each team is able to demonstrate the evolution of ideas within the above iterative design framework and create a coherent presentation of the final design for presentation. External judges are often involved in assessing the work, which enhances the student learning experience by encouraging a professional outlook in the presentation of their work.

One of the largest challenges faced by groups when they work on this design brief is making rapid progress during a short (7-week) period. Additional demands from other courses add to the feeling of too much to do and too little time. To facilitate group work we encourage students to form online groups using an

online learning environment, called Moodle. In the following section, we consider the usage of this too by the group and potential benefit that it had on their progress.

Using Moodle to Support Group Work

During the 2011 term, we had 11 groups of students. Each group was made up of five teammates. Because the design project was started soon after arriving at UCL, many of the teammates did not know each other very well prior to working together. Moodle was used as an online learning environment, providing a repository for lecture slides as well as a discussion board tool. We focus on the use of the discussion board tool here.

Three different discussion boards were setup on Moodle (for the **group** project, for general **discussion** and postings of material relevant to classes, and finally one for important **news** announcements). We had a total of 177 threads across these three discussion boards on Moodle; most of these were on the group forum (total 139 threads). These group spaces were designed such that each group had the opportunity to have its own personal forum although some groups chose to use email instead.

After setting these forums up for each group, we found that groups spontaneously choose to use them to support their group work; almost all of the discussion threads were initiated by the students themselves and required very little input from teaching staff. Some of the threads on the group forum had a lot of replies and became very in-depth discussions for example two had over 50 replies (another three had over 30 replies). Many other threads were just started as way of sharing a piece of work with the group and had no replies.

We were interested in how students were using these threads to support their work. We found that on the group forum students would share and discuss interview transcriptions, photos, design ideas, mock-ups, questionnaire results, interesting papers they had read and summaries of previous meetings they'd had. Groups also used them to plan meetings and collaboratively put together their presentation slides.

In summary, what we saw was that our students had spontaneously re-appropriated the Moodle online learning environment to provide a tool to facilitate and record the development of their ideas throughout this intensive design project. In one example the logical progression of ideas can clearly be traced from early conception through to a physical prototype. The fact that the Moodle forum stored this information would have become invaluable to the students at the point of having to prepare their final presentation for the class, and indeed, preparing their paper for submission to the CHI Student Design Competition.

Benefits for Teaching of HCI

We believe that the above approach has provides a number of benefits to the student learning experience:

- The students are made aware of CHI in the first week of their course. This serves to increase their awareness of the wider community that they are about to become members of.
- The process of working together during the project, and during the experience of collaboratively writing a CHI submission, helps to foster the development of strong learning communities within the student body.

- We are able to produce a novel coursework brief each year. This is considered good practice as it minimises the possibility of students plagiarising from work produced by students in previous years.
- Project-based learning such as described here, successfully aligns the learning outcomes, learning and teaching activities and the assessment as recommended by Biggs [1]. This alignment aids in motivating students as it provides a context for why they need to learn each technique.

General Discussion

In this short paper, we have outlined our approach to teaching user-centered design at UCL. We have focused on how engaging students with the CHI Student Design Competition has enhanced their learning experience. We have also commented on how students have used online learning environments to support their group work and to facilitate the iterative design process that is core to user-centered design perspectives [2,3]. Over

References

1. Biggs, J. (1999): Teaching for Quality Learning at University. SRHE and Open University Press, Buckingham.
2. Buxton, W. (2007). Sketching User Experiences: Getting the Design Right and the Right Design. San Francisco, CA: Morgan Kaufmann.
3. Rogers, Y., Sharp, H, & Preece, J. (2011). Interaction Design: Beyond Human-Computer Interaction. John Wiley.

the past three years we have successfully applied this model of teaching to both our post-graduate and under-graduate teaching and found it to be a resounding success. This has been the case even when the module has been delivered in term 2 (January to February) thus removing the opportunity for the students to actually submit to the competition. Project-based learning appears to be a successful method for motivating and engaging students

For our master's students this year, the deadline for submission to the CHI Student Design Competition was approximately two months after the course assessment thus giving the students sufficient time to produce a paper for the competition. This year, we had three teams produce papers on their design work and submit to the competition. They were highly motivated by the opportunity to participate in CHI and demonstrate their design, research and problem solving skills in an international competition with their peers.