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Preparing Students for the Global Workplace: An Examination of Collaborative Online Learning Approaches

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ABSTRACT

The rapid emergence of the global, digital workplace within contemporary design practice has raised questions regarding the educational implications of professional collaboration across cultural, geographical and disciplinary borders. Are we effectively preparing students for this new creative paradigm? Educationalists are responding by implementing more face-to-face team-based approaches, but the potential of online learning - the medium ideally suited to this new international digital work environment - has largely been overlooked.

COFA Online has been creating, evolving and evaluating fully online art and design courses for the last three years in response to these questions. By triangulating data from a series of online case studies, teacher and student experiences, and three years of evaluations, this paper highlights specific online pedagogical approaches that have successfully engaged students in an active, collaborative online learning environment. It also pinpoints problems that can occur in online teamwork, and investigates several potential solutions.

If carefully considered, online team-based learning can parallel contemporary collaborative work practices within the global design industry, and can help equip students with the collaboration and communication skills they need in order to work successfully in this professional environment. This paper highlights the need for educationalists to continue to pursue higher levels of understanding of online collaborative learning in the context of design, and offers suggestions on how to move forward.

INTRODUCTION

There are significant shifts currently occurring in design. A globally distributed online, collaborative and cross-disciplinary paradigm of design practice is rapidly emerging. Globalisation has introduced challenges that make much of our previous working processes (as designers) appear obsolete, and consequently there are new skills required that are not yet clearly defined.

For example, in the past, the designer would largely work alone in a single discipline based process - graphic design, product design, architecture etc. One designer, or a team of designers, working from a similar skill/knowledge base could often solve problems within these contexts. In contrast, the contemporary context requires a shift in approach that

encompasses diverse processes running in parallel. A challenge in this scenario is in defining the new skills and tools required by designers, *"In parallel processing environments all team members are much more likely to be in the room from the beginning of the project. Therefore the question today is: do designers have the skills and tools necessary to participate in the initial strategic stages of complex projects? Design education has been extremely slow to wake up to the implications of these two above-mentioned drivers."* (VanPatter 2005).

Design education programs should be moving to address the need for our young, aspiring designers to feel comfortable working in global teams comprising colleagues from different professional backgrounds and cultures, operating in online workspaces. The language of design is increasingly international and this is continually increasing with the emergence of China and other Asian economies as key drivers of product development and new markets. There are few innovators in education that link design students in global, online teams working on complex design problems, *"Today's educational system adapts too slowly, if at all, to the rapidly-changing economic realities of the increasingly digital marketplace. Students need new methods and strategies for development of skills and systems that bridge the gap between schoolwork and professional work ... Educational institutions must envision and define a wholly new pedagogy for the digital age."* (DiPaola, Dorosh and Brandt 2004).

Out of this situation emerge both challenges and opportunities – however the issue of training designers to facilitate collaboration is a priority if design education is to maintain its relevance to industry. How do we equip designers with the skills to lead collaborative processes now embraced by industry across a global stage? The emphasis is shifting from discipline specific problem solving to an integrated cross-disciplinary approach. As educators, we must increase the ability of future designers to cope with these changes.

I. COFA ONLINE

COFA Online¹ (established 2003) is an academic unit at the College of Fine Arts, The University of New South Wales, Sydney, Australia, responsible for the academic development and management of a diverse range of fully online undergraduate and postgraduate² art and design

¹ COFA Online: www.cofa.unsw.edu.au/online

² Master of Cross-Disciplinary Art and Design

courses. There are currently 30 COFA Online courses such as: 'Graphics and Contemporary Society', 'Collaboration & Visual Communication in Graphic Design', 'Print Advertising for a World Market', 'Unravelling Urban Design', 'Contemporary Aesthetics in Digital Architecture', 'The Language of Interactivity' and 'Visual Identity in the Built Environment'³, with more courses under development.

Mirroring the increase in cross-disciplinary communities within design practice, COFA Online developed a *Fellowship Program* comprising a growing number of learning and teaching experts, academic staff and industry professionals from a range of disciplines, to develop online courses and teaching practices relevant to today's design industry. Through constant evaluation and reflection, this community ensures that the learning and teaching practices employed in the courses are effective and relevant.

In order to facilitate successful online collaborative learning, COFA Online uses Omnium® software [www.omnium.net.au] to host its online courses. *The Omnium Research Group*, led by Rick Bennett of COFA, has invested years of research into practices of online creativity and collaboration in order to develop software that has been specifically designed and tested to meet the unique requirements of collaborative design practice, and that integrates social interaction into the learning and teaching process.

II. HOW IS COFA ONLINE RESPONDING TO THE CHANGES IN INDUSTRY?

By identifying the following instances of emerging new design practices, this paper will exemplify COFA Online's learning and teaching approaches that offer students an educational experience that parallels current work practices in the contemporary design industry.

A. Online collaboration and communication tools

The increasing availability of design specific collaborative tools can be seen as indicative of the changes underway in the industry on a broad scale. Adoption of digital collaboration tools such as Autodesk's BuzzSaw [www.autodesk.com/buzzsaw] are promoting effective online collaboration and project management with all the efficiency that global connectivity offers.

The use of blogs and wikis has also become a well-recognised practice in the design industry. The Open Architecture Network [www.openarchitecturenetwork.org] is, "an open - source online space where architects and engineers can share their ideas with organisations and community leaders that are seeking design solutions for coping with the aftermath of natural disasters and political conflict." (Architectural Record Journal, 2007). In addition to forging connections between socially responsible designers and worthy clients, the network allows creative colleagues to comment on one another's ideas, along the lines of websites such as Wikipedia [www.wikipedia.org]. Another similar project is the Public Information Exchange (PIE)

[www.pieaia.org] - a digital interface that Local Projects, a design studio in New York, is developing for the Centre for the American Institute of Architect's New York Chapter. PIE is designed to solicit feedback from design professionals and community members about new buildings in development throughout greater New York.

COFA Online's parallel

Experience with such online collaboration tools is vital for today's design students. The Omnium® software (Figure 1) used by COFA Online allows students to experience working in an online collaborative studio, offering them valuable practical experience before they reach the workplace.



Figure 1. Omnium® software

As with the collaborative tools used in industry, students and teachers in COFA Online courses effectively share ideas, comment on each other's work and collaborate on design projects both as an entire class and smaller design teams. Students have access to, and can contribute online resources, links and discussions, and can also upload, share and present electronic files (documents, images, videos and sound) as part of the collaborative design process.

³ For the complete list of COFA Online undergraduate courses, please visit: <http://www.cofa.unsw.edu.au/schoolsunits/schools/cofaonline/gened.html>

Ease of use is a key aspect of this software, as is effective conveying and clear communication from the online teacher. All areas of the course website are ‘signposted’ so that when a student enters an online course, every ‘place’ the student can go has a clear message describing the area, its function and where to proceed to begin the course. Navigation buttons are also always referred to by the same name, and all project briefs follow a prescribed format that include numbered instructions of ‘How’ and ‘Where’ to complete the task, and so on⁴.

Establishing social interaction amongst online participants is also important. In order for a vibrant online social and learning community to be established, it is important that the teacher understands how and when to facilitate communication and exchange amongst students (Salmon 2003). A popular ‘introductory’ task in one online course involves student choosing an avatar (an image that represents the student’s character) for their online identity, followed by the entire class analysing the image’s meaning in a large discussion. This establishes associations with the students’ avatars and personalities, making students appear more personable, real and approachable, and helps facilitate more trust and open communication during later collaborative design projects.

These experiences within the Omnium® online workspace⁵ have been rated as effective and positive by students (Figure 2), and parallel the developments seen in contemporary design practices.

The Online Platform used to facilitate this online course represented an effective tool for online learning

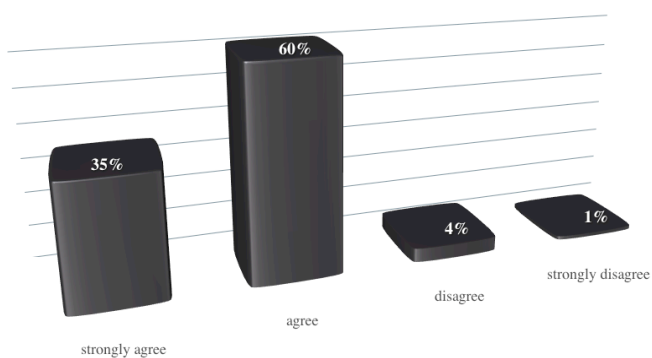


Figure 2. Effectiveness of Omnium® software as a collaborative learning tool. Q33 - Session 2, 2006 COFA Online course evaluations

B. Flexibility of time and location

The scenario of the business professional being ‘connected’ is now the norm. Designers can remain in touch with colleagues and projects while traveling internationally, through mobile, hotel, airport and in-flight connectivity options. This shift in working practice has resulted in an increased adoption of more polychronic (non-consecutive) yet highly productive use of time (Kaufman, Lane and

Lindquist, 1991). Designers often work on several projects at once, and the ability to stay connected means that traditional working hours are becoming less of an issue, particularly when working across time zones.

COFA Online’s parallel

The flexibility offered by online collaboration and learning tools means that students can now study at times and locations that suit their own busy lifestyles, mirroring contemporary work practices. COFA Online has teaching staff residing in Australia, Germany, South Korea and Serbia, teaching students in Australia, Europe and Asian countries.

A recent study⁶ of UNSW students found that 59.2% of undergraduate students are undertaking paid work in addition to carrying a full-time study load, and 35% of students reported that work interfered with their studies in face-to-face classes. In contrast, the structure of COFA Online courses means that as long as students participate regularly each week, when they do so is up to them. The majority of students in COFA Online courses study during the night (Figure 3), when they have time to concentrate after balancing family and work commitments.

What time of day do you prefer to study online?

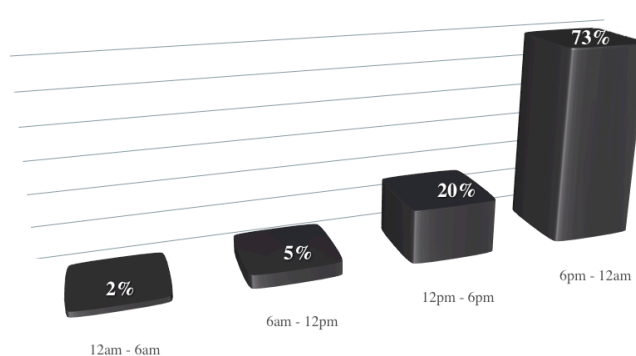


Figure 3. Preferred online study times. Q32 - Session 2, 2006 COFA Online course evaluations

The structures of COFA Online courses are designed to support this polychronic approach to learning, with the majority of the interaction of students and teachers taking place in asynchronous class and individual team discussions. While the online learning environment does have a synchronous chat feature, we have found that the most meaningful learning and design processes tend to occur when students have had time to reflect upon what is being said by their peers, and have time to think about what they are contributing in response.

⁴ Examples of COFA Online project briefs available on request.

⁵ You can browse current COFA Online courses as a visitor (you will have limited access to course material). Visit http://www.cofa.unsw.edu.au/schoolsunits/schools/cofaonline/2007_Course_Links.html for course links

⁶ Report on the UNSW Survey of Student Engagement 2006, Appendix 2, pg 31

Teachers must be online at regular intervals to ensure a quick response to student questions and discussions, yet allow students enough time to take ownership of discussions. COFA Online teachers are encouraged to use their allocated teaching time in short but more frequent visits, rather than working in larger, more infrequent blocks of time (as would be the case in a traditional face-to-face studio environment). This practice also encourages students to follow a similar pattern of participation that further increases overall course engagement, *"I really enjoyed this course and would check it constantly (just like my emails) to see if new lectures or talking points/responses had been posted."* (Student, Iconic Spaces).

C. Collaborative design process

Contrary to Schön's notion of the designer's process being *"...an individual's reflective dialogue with their work..."* (1985) - communication, leadership in collaboration, and the ability to 'co-create', are widely acknowledged as key assets in the skill set of design professionals working in, *"the new emerging digital paradigm related to art, design, and technology."* (DiPaola, Dorosh and Brandt 2004).

Tom Kelley, general manager of the influential global design practice IDEO [www.ideo.com], argues that 'the collaborator' is an integral role for innovation. Similarly, the Distributed Team Innovation (DTI), a collaborative project between the Polhem Laboratory at Luleå University of technology, Sweden and the Center for Design Research at Stanford University provides a concrete precedent supporting the notion of *'thinking together apart'* (Larsson 2003). The aim of DTI's Project was to develop a 'virtual pedal system' for the Volvo Car Corporation. The design focus was on creative brainstorming and ideation and in turn a striving to reach consensus on the final concept using online collaborative tools. Observations of the behaviours, language and processes utilised by the collaborators concluded that although industry is embracing global online work teams, there is a need for more *"...support for many of the activities that 'thinking together apart' involves."* (Larsson 2003).

Individuals able to manage the synchronisation and organisation of such collaborative working practices are increasingly in demand. A recent study of FTSE 200 companies (Gillingson & O'Leary 2006) found employers now take for granted that graduates possess a high level of disciplinary knowledge. The study found the top four qualities employers most value in employees are:

- Communication skills
- Problem solving abilities
- Collaborative teamwork skills
- Creative and innovative thinking

For designers these shifts in working practice demand an expansion of their traditional skill base in order to remain effective. Similarly, we must provide design students with these skills so that they enter the workplace capable and competitive.

COFA Online's parallel

All COFA Online courses embrace this concept of collaborative learning, and aim to provide students with a reflective learning experience through the active construction of knowledge in an interactive learning community. Due to the studio-like practice being undertaken in the courses, class size is typically 20-30 students, organised into teams of 5 comprising students from different discipline backgrounds if possible.

Each COFA Online course comprises online *lectures* that introduce key concepts to students, associated *talking points* where the entire class discuss issues raised in the lecture, and formulate criteria or analytical tools needed to undertake connected *projects* (either as individuals or a team in designated areas of the course website). Peer review is also included as an integral component to the design projects at key development stages, to allow students to reflect upon what they have learned, and to apply this knowledge in the critical review of other students work, and their own (Figure 4). Such constructivist learning approaches have been found to enhance student motivation, creativity, critical analysis and skill acquisition within an active online learning environment (Weigel 2002), which are the key employee attributes (in addition to discipline specific knowledge) being sought in today's design industry.

A majority of COFA Online students preferred the collaborative nature of the online courses (Figure 5), and felt that they were gaining valuable experience directly related to the design industry, *"I really feel it gave me a taste of how it might be to work as a designer, all this collaboration, brainstorming in groups, putting your ideas out there and then narrowing them down in a communal effort to come up with a final design that is focused and visually and conceptually vibrant..."* (Student, Visual Identity in the Built Environment).

COFA0202 'The Language of Interactivity' Course Structure

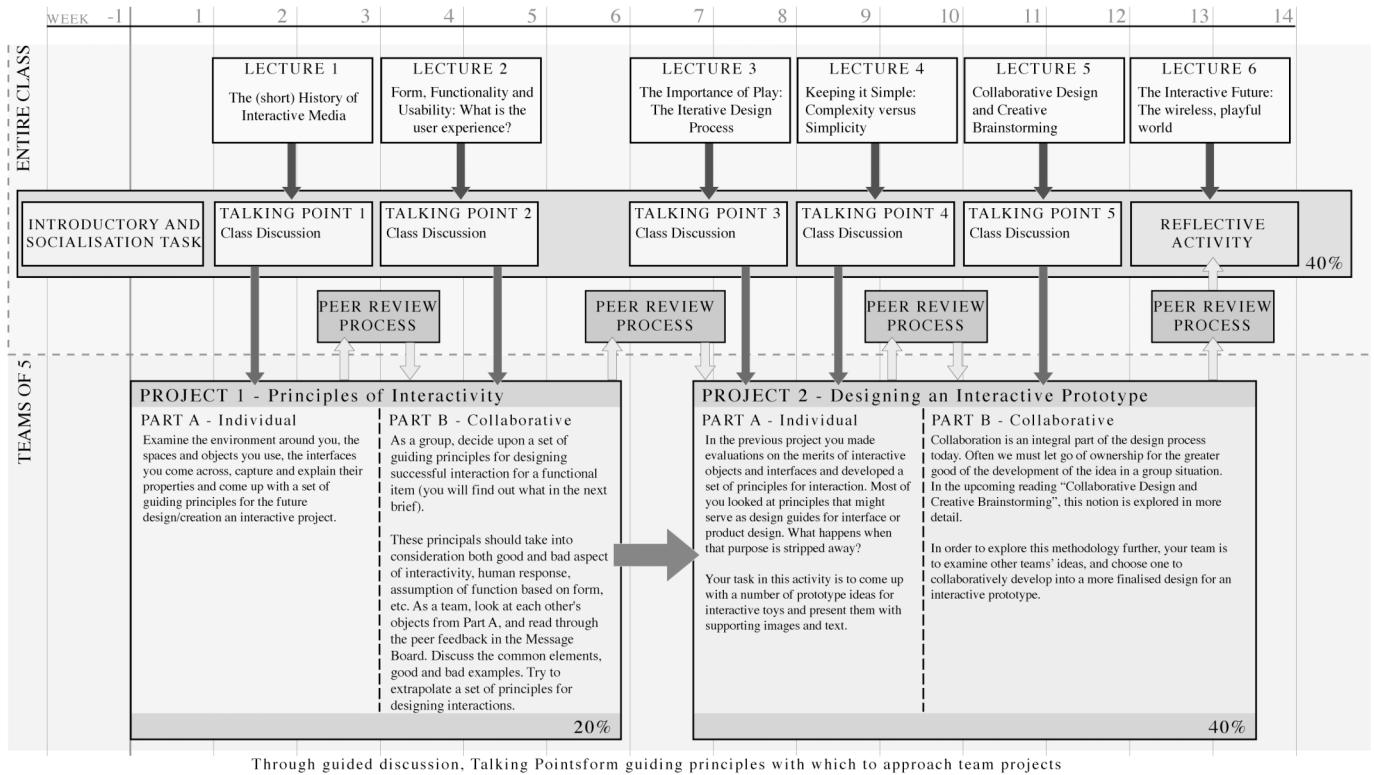


Figure 4. Example of typical COFA Online course, showing individual and collaborative components of course structure.

I preferred the communal nature of the online course rather than working individually

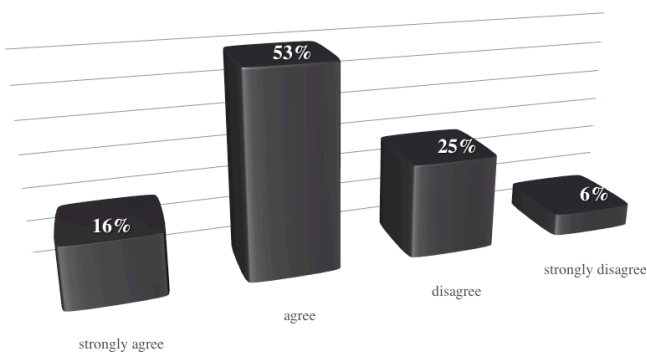


Figure 5. Student preference for collaborative online study Q16 - Session 2, 2006 COFA Online course evaluations

D. Multidisciplinary approaches

Design practice is itself becoming more focused on multidisciplinary and cross-disciplinary approaches. Innovative practitioners are blurring the boundaries of traditional design disciplines. For example, architect and engineer Santiago Calatrava has reversed the trend to separate disciplines of architecture, engineering and art. The cross-disciplinary nature of Calatrava's practice is exemplified in the Metropolitan Museum of Art exhibition 'Sculpture into Architecture'

[www.metmuseum.org/special/Calatrava/images.asp].

Calatrava easily works between both architecture and engineering, often creating innovative works that rely on a firm grasp of both the creative and structural aspects of design.

Educators must ask questions about how designers are working with other professions. Danny Stillon, interaction and product designer at IDEO asserts, "Higher education institutions must encourage working across the departments that exist within a design school. Institutions must also work across disciplines, universities, and industries to increase the value of student's experiences. Above all, higher education institutions must teach designers to be good learners...IDEO hires those who demonstrate the ability to learn quickly." (Stillon 2000).

COFA Online's parallel

COFA Online courses are designed as General Education and Elective courses, meaning that students from all faculties at UNSW can choose to enrol (along with students from other institutions). So far over 2000 students (including students from disciplines outside of design such as medicine, commerce, law, etc) have participated. Students learn to communicate across disciplines and cultures, particularly so in courses designed specifically around the concept of cross-cultural design and communication such as 'Graphics in Contemporary Society', 'Cross-Cultural Sculpture', and 'Print Advertising for a World Market'⁷.

Due to the collaborative nature of the courses, each student is encouraged to contribute their own discipline specific

⁷ You can visit these online courses. Please find links on our homepage http://www.cofa.unsw.edu.au/schoolsunits/schools/cofaonline/2007_Course_Links.html

knowledge and perspectives to the course (Figure 6) as the discussions, projects and peer reviews progress, *“I enjoyed being able to work with people from across the design spectrum – some with similar backgrounds, others fairly different from my own, but all bringing their own fresh perspective to ideas and discussion. I think this sort of collaboration will be important in real-life work situations as design strands start to cross over even more as is the growing trend...”* (Student, Print Advertising for a World Market).

III. CONCLUSION

The design industry expects graduates to possess core competencies and skills. The contemporary digital paradigm however, demands graduates also possess higher order communication skills, problem solving abilities, collaborative teamwork skills, innovation and creative thinking skills. COFA Online has begun to respond to this need by developing multidisciplinary, collaborative online design courses to parallel these same trends in industry.

These approaches have worked for COFA Online courses, yet must undergo constant evaluation and improvement as online pedagogy and industry working practices evolve. This paper doesn't advocate online education as a replacement for face-to-face programs. There is strong justification in industry for integration of online collaborative learning into design education programs. This is essential not only to foster appropriate skills for industry, but also ensures university education remains relevant in tomorrow's digital workplace.

I was able to contribute relevant examples from my own experiences via the activities and projects

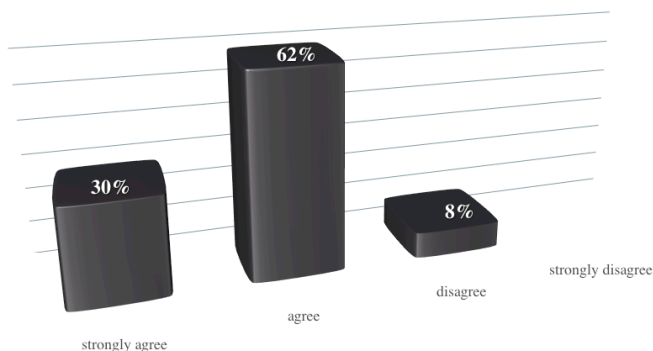


Figure 6. Ability of students to contribute existing knowledge from their own discipline. Q15 - Session 2, 2006 COFA Online course evaluations

In 2006, the majority of students (83%) found that working in a multidisciplinary environment greatly enhanced their learning experience (Figure 7), and they were able to gain an understanding of the benefits of the multi-disciplinary design process, *“We start working together using a universal language– ideas get thrown around, accepted, discarded, improved. We move away from/around/with/against each other, but eventually move as one along a particular pathway, our ideas weaved and coagulated. The individuals grow and become more knowledgeable, but at the end of the process, each maintains their identity – which has become enriched [concepts/understandings become more solidified] and more complex...”* (Team Tauri, reflections on course, Collaboration, Visual Communication in Graphic Design).

Collaborating with other students from different backgrounds enhanced my learning experience

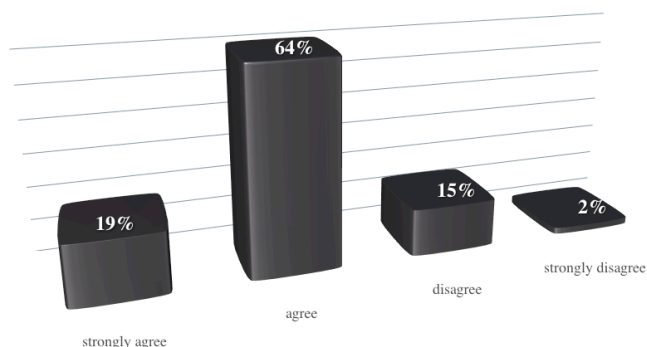


Figure 7. Collaborative learning enhanced learning experience. Q14 - Session 2, 2006 COFA Online course evaluations

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