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THE SOCIAL NETWORK VIRTUAL DESIGN STUDIO

Integrated design learning using blended learning environments

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Abstract. Online communications, multimedia, mobile computing and face-to-face learning create blended learning environments to which some Virtual Design Studios (VDS) have reacted to. Social Networks (SN), as instruments for communication, have provided a potentially fruitful operative base for VDS. These technologies transfer communication, leadership, democratic interaction, teamwork, social engagement and responsibility away from the design tutors to the participants. The implementation of Social Network VDS (SNVDS) moved the VDS beyond its conventional realm and enabled students to develop architectural design that is embedded into a community of learners and expertise both online and offline. Problem-based learning (PBL) becomes an iterative and reflexive process facilitating deep learning. The paper discusses details of the SNVDS, its pedagogical implications to PBL, and presents how the SNVDS is successful in enabling architectural students to collaborate and communicate design proposals that integrate a variety of skills, deep learning, knowledge and construction with a rich learning experience.

Keywords. VDS; social networking; social learning; problem-based learning; PBL; Web2.0.

1. Introduction

Since the early 1990's the Virtual Design Studio (VDS) established itself as a well-functioning learning environment that allows students in various locations to engage synchronously and asynchronously in design learning. VDS have facilitated collaboration across international boundaries and helped re-

define the social and cultural contexts of the design studio, whilst providing learning opportunities for students within the context of the internationalization of architecture. In the recent past new technologies allow the VDS to evolve into new directions – some of which addressing shortcomings of the past. Web 2.0 technologies, digital native users and universities' investments in e-learning and content management systems have triggered a radical shift of how architectural design is taught by teachers and produced by students (Ham, 2010).

The VDS established virtuality as acting while physically distant or as acting by employing digital tools (Maher et al, 2000). Virtual Environments (VE) were established by the choice of design (Achten, 2001), way of communication (Schmitt, 1997) or digital tools (Kurmann, 1995). Later the VDS developed into real immersion within a VE, the medium for design interaction being the VE Design Studio (VeDS) (Schnabel, 2002). With the advent of Web 2.0 technologies, it became apparent that the next logical step to develop the VDS was collaboration within a social learning environment (Schnabel and Howe, 2009). Ease of communication, leadership opportunity, democratic interaction, teamwork, and the sense of community are some of the improved aspects that are offered by Social Networks (SN) (Owen et al, 2006). Mitchell (1995) also refers to the need for an ongoing evolution of the VDS towards a fully integrated studio where the borderlines between realms, professions, tools and mode of communications are dismantled. Subsequently the advancement of VDS moves design education beyond conventional boundaries and curricula, and engages participants socially from diverse professional fields. The Social Network VDS (SNVDS) is subsequently the successor of the VDS and is presented here.

2. SNVDS Case Study: A third year architectural design studio

The architectural design studio presented here is a core third year design unit in the Bachelor programme at Deakin University. The studio operates in on-campus mode with an enrolment of 110 students. The unit is the capstone in the undergraduate degree and is conceived as the unit wherein students demonstrate their prerequisite skills for entry into the Masters Degree programme.

The 'Architecture 3b'-SNVDS comprised two projects. Firstly, a five week project titled "Rock and Roll Architecture", whereby students designed an inner-city music studio and rehearsal space. This project was weighted 40% of course marks, and required students to complete a five minute video presentation of their design, utilising *YouTube*™ for project submission. The second project, "Future City Hong Kong", project was a seven week project based on the design of a pencil tower in the district of Tsim Sha Tsui, Hong Kong, and

was weighted 60% of unit marks. The 'Future City Hong Kong' project will form the focus of this paper; however refer to Ham (2010) for research relating to Project 1.

The project was framed around an international competition format, with the brief based on a Hong Kong developer demolishing the existing building in Tsim Sha Tsui for a fifteen storey building. 'The client is most interested in maximising rental return on the property. In achieving this, they wish to market the building as a 'Low Energy Mixed Use Development' and intend to capitalise on this prime point of difference' (unit guide, 2010). The brief required a ground floor flagship store, four levels of mixed-use retail, four levels of accommodation, three levels of restaurant and a top floor nightclub, based on a footprint of approximately 9x11m. The site is located within a high dense commercial environment, but is also opposite a large, open landscaped park (Kowloon Park).

Deakin University requires all units to be hosted on the centralised Learning Management System (LMS), Deakin Studies Online (DSO), which operate on *FirstClass Technology™*. Engagement in DSO for this unit was the minimal required by University policy, and was limited to the posting of a Unit Guide and a repository for digital resources to support project work. The design of DSO disallowed engagement of people outside of fee-paying students and Deakin staff who have been given password-controlled access. Academics and practitioners outside of Deakin are denied access to unit materials completely. DSO was found to 'effectively reinforcing the creation of dis-integrated knowledge silos' (Ham, 2010), thus limiting the potential of the design studio programme.

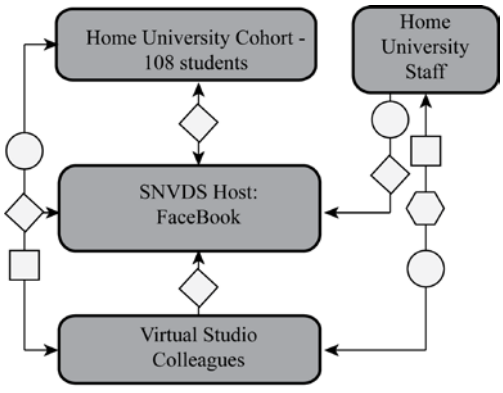

Figure 1: Modes of communication in the SNVDS

The *FaceBook*™ (FB) -group set up by the unit chair was the principal enabler of the SNVDS. Students cohort in the FB group had full read and write access to specific functions of FB: 'wall', 'discussions' 'photos' and 'videos' and 'read-only' access to 'events' and 'info'. The unit chair was the main facilitator of posting of events and discussion entries relating to the unit and projects (Figure 1).

Skype™ was used to facilitate video and voice communication between students and virtual studio colleagues. Video-based lectures and seminars with student groups in lecture theatres by Hong Kong-based colleagues provided the dissemination of facts about Hong Kong's climate, culture, as well as important information relating to the site that was inaccessible from the Home University. Impromptu Skype sessions occurred within the design studio to allow students formative and informal feedback from virtual studio colleagues on individual design works (Figure 2). In the final reviews, video-based feedback was provided to students in a hybrid virtual-physical review session, with virtual studio colleagues providing a real presence within the review. In Summary the studio was enriched and expanded with a blended learning environment that had at its core a social environment and multiple means of communication and engagement.

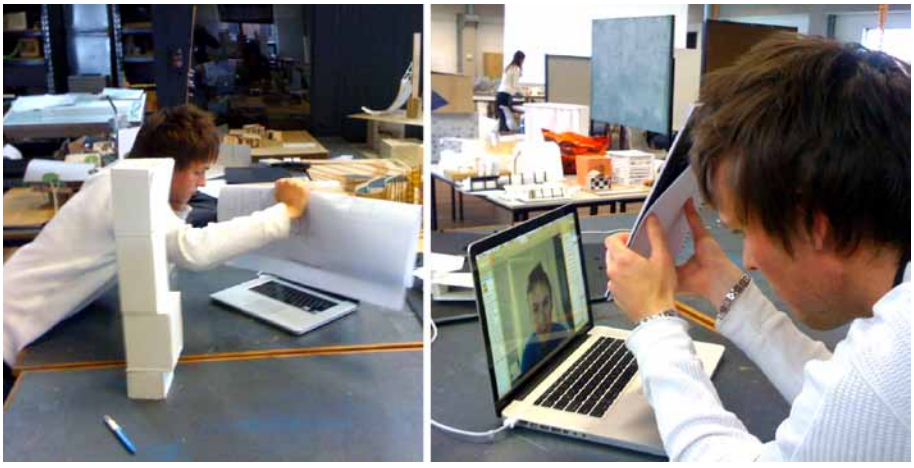

Figure 2: Skype-based virtual feedback session in the design studio

3. SNVDS as a framework for problem-based learning

Most approaches to problem-based learning (PBL) are sequential following the conventional method of Albanese and Mitchell's (1993) seven steps

model. Yet, this linear format is limiting and imposes a structure that does not fit with an iterative and reflexive processes facilitating deep learning. Flexible interplay between the seven steps improve the social engagement of students of the 'Net-generation' (Oblinger and Oblinger, 2005), especially where social networking sites are used to replace or augment the PBL tutorial or studio sessions.

Technologies of Web 2.0, by embracing problem-based learning, have utilised blended learning formats, where face-to-face contact is supported by instructive resources such as *WebCT™, Blackboard™,* web-blogs or static websites. However, the effectiveness of these platforms for online learning has been limited by typical Web 1.0 approaches to learning (Oblinger and Oblinger, 2005). The internet, when employed as a filing cabinet for resources or post-box for messages is too unwieldy to generate the experience of flow that motivates deep learning (Craig, Graesser, Sullins, and Holson, 2004). Further impeding the effective use of Web 2.0 technologies has been design of learning experiences by teachers from the 'Baby-boomer' or 'Gen-X generations', who do not think or learn in the same way as their students (McNeely, 2005). It is thus important that PBL flexibly encompasses the thinking and learning styles of both teachers and students. Existing PBL structures provide scaffolding for problem definition and access to resources and learning objective development, which are transferable to online platforms. Subsequently, for successful learning in the present online environments, educators must now constructively address additional issues: motivation for interaction (Craig et al, 2004), processes for socialisation (Dede, 2005) and moderation for exchanging information (Salmon, 2000).

In a non-linear modification of Salmon's (2000) model of e-learning, the learning experience is the context surrounding the process of knowledge construction, which is a interlinking of concepts and actions spanning two broad areas of endeavour: educational/technological scaffolding and social interactivity (Figure 3). Access to resources and problem development inform the scaffolding while social interaction and information exchange are facilitated by the potential for interactivity of the learning tasks. All components of the process are interlinked. Since all members of the learning community (teachers, students and other relevant stakeholders) contribute to knowledge construction, they are not represented as disparate entities in this model. The traditional steps of PBL are subsumed in the educational scaffolding but are modified to suit the online technology.

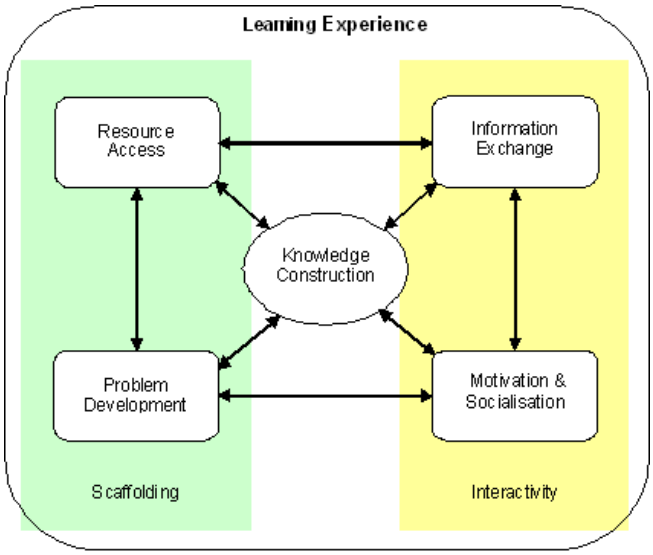

Figure 3: A social interaction model of e-learning by Howe and Schnabel (2011)

3.1. SCAFFOLDING: TECHNOLOGY AND RESOURCE ACCESS

Online learning strategies emerged in Architectural education in the last two decades (Kvan, 2001; Achten, 2001; Schmitt, 1997; Kurmann, 1995; Maher, Simoff and Cicognani, 2000; Schnabel, 2002) and recently into a more social learning environment (Ham and Dawson, 2004). SN impact on the quality of engagement and learning outcomes (Schnabel and Howe, 2009) through ease of communication, leadership opportunity, teamwork, and a sense of community (Owen, Grant, Sayers and Facer, 2006). Finally, the finding that design productivity may be better supported by remote settings than co-located ones was raised by Kvan and Gao (2006).

Students were surveyed at the beginning of the trimester on their use of SN. Over 90% of students already use such platforms. The FB site was made accessible besides to the students and tutors of the course to anyone who was interested in the topic of the studio. Students undertook research relating to their design task and target audience and posted this information as a shared resource for use and discussion by all participants. Significant opportunities were provided for student-staff interaction online, mostly outside studio hours, and contact using other media was also possible (mobile phone, video-chat, etc.). This is a particularly important issue in the context of diminishing resources within the school for seasonal staffing and a staff: student ratio

of 1:27. Staff, experts and peers were commenting and posting additional resources to further enlarge the students learning.

3.2. INTERACTIVITY: MOTIVATION AND SOCIALISATION

Motivation and socialisation were facilitated through site personalisation of the SN website, opportunity for development of flow and diverse learning activities. Respecting personal characters in the learning experience of the students the SN facilitated flow (Csikszentmihalyi, 1996). Flow is an important component of creative knowledge environments and has been found to facilitate content acquisition, teamwork and positive affect towards subject mastery (Beylefeld and Struwig, 2007). This positive affective experience in turn increases team effort and spontaneous communication. Huang (2003) argued that motivation is enhanced or maintained by flow, achieved when the site is pleasurable as well as functional. The studio FB-site included a 'wall'-discussions, videos, chat, photos and RSS-feeds enhancing motivation because they enable hedonic experiences.

3.3. INFORMATION EXCHANGE

While social interaction is necessary for information exchange it may not be sufficient; the learning activities have to be varied, challenging and meaningful. Information exchange in the program occurred in multiple areas of interaction: with peers, resources, teachers, other stakeholders and the community. Not only does blended learning involve integration of different media for information exchange, it also involves amalgamation of the contributions of all members of the learning community, a process for developing collective intelligence (Levy, 1997). SN provides a mechanism for presenting collective information for individual use as well as aggregating individual insights into a collective decision (Surowiecki, 2005). The PBL experience was situated within the professional realm and the wider online communities, thus providing a transformative environment for blended learning.

3.4. KNOWLEDGE CONSTRUCTION

Darling-Hammond et al (2008) found that deep learning is enhanced when students apply classroom-gathered knowledge to real-world problems, a process requiring sustained engagement and collaboration. Active learning practices have an impact on student performance greater than any other variable, including student background and prior achievement. The current PBL experience addressed three criteria for authentic learning and teaching developed by Newmann and Wehlage (1993): construction of meaning and pro-

duction of knowledge, disciplined enquiry to construct meaning and production of discourse, products and performances that have value beyond school. To research the problem required higher order thinking combining knowledge from design, culture and construction to generate a successful overall outcome. Students had to research local conditions, collect environmental and cultural data and develop a design concept, which integrated all architectural elements.

In construction of a design that fits the local requirements and contexts, social interaction intensified with peers, friends and other FB members. Because each member had to find out appropriate information via their SN environment, the students remained motivated and engaged with the PBL program; similar to findings of Schnabel (2002), a process analogous to a typical collaborative scenario in practice, where designers and specialists contribute to an overall scheme in sequential and parallel activities. The learning discussion involved social networking utilising both human resources and design technology, a convergence of social communication and technological environments. An important benefit of this convergence for facilitators is the opportunity to learn with and from the students. Students are often ahead of teachers in mastery of technology (McNeely, 2005). The loosening of the outdated hierarchical education system, reframing teachers as facilitators of social learning, provides the great opportunity for teachers to upgrade their own skills in the process of working with their students.

4. Conclusion

The SNVDS moved participants from sequestered autonomy into an enriching, deep learning experience in communication and design. It engaged both students and academic staff in learning about professionalism, communication, collaboration, and cultural engagement.

SN environments offer new opportunities for creative development of PBL because disciplinary, professional, institutional and national boundaries are more easily permeated. Social multi-nodal networking sites (*Ning*™, *YouTube*™, *Google Docs*™, *Doodle*™, *Facebook*™, *Twitter*™, Wiki's, or other mash-up multi-dimensional platforms) were meaningful integrated in learning activities enabling communication of learning goals, disseminating learning resources, creating knowledge and original ideas, providing feedback and aligning with assessment of learning outcomes. These media-rich platforms don't solve all problems educators and learner have; the constant change of technologies, interfaces, social trends and risk of failure are omnipresent and increase the flow-effect. It adds a certain weight and responsibility to the educator to facilitate the learning environments and recognise the dif-

ferent levels of expertise and experience of the learners. Yet these platforms allow learners to reframe their problems in such a way that these problems can be explored in learning activities, thus enriching the current praxis of PBL. They are effective at tapping into social capital; therefore the process facilitates students' self-directed learning in problem formulation and research and it becomes possible to embrace professional and interprofessional SN communities to achieve higher levels of collective intelligence. The challenge remains the same: to facilitate student learning. It is the way in which we engage each other in these activities that is evolving to match today's communication needs.

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