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The blended design studio: An appraisal of new delivery modes in design education

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Abstract

The design studio is widely accepted as the core of curriculum because it aims to include many curricular topics within a project-based approach. Despite the importance of the studio in design education, it was observed that the delivery modes in studio teaching have not much evolved as a response to changing generations and developing technology. Having reviewed current trends in educational technology, this paper presents a framework for a blended design studio in which the strengths of traditional and online learning methods are combined. Among the new online learning tools Web 2.0 applications (such as Facebook, Blogs and Wikis) and learning management systems (such as Moodle, Blackboard, and WebCT) deserve particular attention. The uses of Web 2.0 applications and learning management systems in design studios have been very rare and are just emerging. This paper proposes a blended and social constructivist model for the design studio and presents the results of an empirical research in an exploratory case study which combined traditional design studio, a learning management system and social networking media. It is found that the blended studio suits well to the needs and preferences of new generation of design students who are often named as “digital natives”. The opportunities and challenges of using social networking media and learning management systems in design education context are discussed and suggestions are made for further experimentation and research.

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1. Introduction

The design studio is the traditional mode of learning in design education. It is essentially a shared environment in which students are assigned problems and projects to solve through a process which is often acknowledged as a “reflective practice” or “a dialogue of thinking and doing through which [students] become more skilled” (Schön, 1983). The design studio is widely accepted as the core of curriculum because it aims to include many curricular topics within a project-based approach. As a learning method, the roots of the design studio can be traced back to the Middle Ages where apprentices learned under the supervision of a master artist or craftsman. The teaching system of Ecole des Beaux Arts has often been recognized as one of the foundations of current design studios (Lackney, 1999). In the Beaux Arts model, the students are given a design problem and guided by their instructors via critiques throughout the process. Typically, the process for each project culminates with an evaluation in the form of a final

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jury. Although it has been over two and a half centuries since the adoption of this system, the delivery modes in studio teaching have not much evolved as a response to changing generations and developing technology.

On the other hand, the characteristics of design students have changed in a great extent in time. Now, a new generation of students who are referred as “digital natives” are in the studios. The term “digital natives” was first coined by Prensky (2001) to define the differences between generations in terms of their attitudes toward digital tools. According to Prensky, a “digital native” is a person who “borns into the digital world” unlike a “digital immigrant” who “learns to adapt to the environment...(but) always retain to some degree their digital immigrant accent.” Prensky's definition of “digital natives” has similarities with definitions of Generation Z, or Generation M (for multitasking), or the Internet Generation which refer to people born from the early to mid 1990s to the present. Digital natives have grown up with the Internet, which became increasingly available after early 1990s. They are highly connected, since many of this generation are experienced in networking and the related facilities such as instant messaging, text messaging, and file sharing. They are no longer limited to the home computer, but they use mobile computing devices such as smart phones, touch screens, tablet computers, etc. They have also a tendency for seeking multitasking and stimulation in their activities, since they have been exposed to many types of media continuously and simultaneously. Digital natives are also active users of participatory Internet applications; they curate online at a rapid pace: sharing thoughts and experiences on a variety of media, topics and products.

The traditional teaching methods are no longer sufficient for the new generation of design students. Therefore, having reviewed current trends in educational technology, this paper presents a framework for a blended design studio in which the strengths of traditional and online learning methods are combined. A new model for the design studio was proposed and application of this model was demonstrated in a real-life case study. An empirical research was conducted to compare students' experiences in the blended design studio with the traditional counterpart. The paper was organized in six sections. In the first two sections, learning management systems, Web 2.0, and social networking media were explained as new technological tools that may drive change in design studios. Then, the blended system was proposed as a new model for the design studio in the third section. The fourth section describes an exploratory blended design studio and an empirical survey which was conducted to analyze it. The fifth section presents the results of the survey. Implications of the study and suggestions for further research were discussed in the final section.

2. Learning management systems

A learning management system (LMS) is a software application for the administration, documentation, and tracking of online courses. Moodle, Blackboard, and WebCT are some examples of learning management systems. A LMS can provide access to all course related resources including calendar, assignments, readings, images, videos, etc. It also enables communication between the participants through online discussion forums and instant messaging. In the design studio, a LMS allows students to communicate with instructors and team members, give and take online critiques, download course materials, design briefs, submit design sketches and design projects. All of these are handled via a structured interface. Pektas and Demirkan (2011) evaluated the usability of Moodle LMS in design teamwork and found that the usability levels were satisfactory. Despite its many advantages, LMS use in design studios has been rare, yet.

3. Web 2.0 and social networking media

Internet has now evolved to a social and distributed environment which is often acknowledged as Web 2.0. The term Web 2.0 refers to web applications that enable participatory information sharing, user-centered design, and collaboration. Typically, a Web 2.0 site facilitates for interaction and creating content rather than merely viewing pre-published content. Social networking platforms attracted particular interest among many Web 2.0 applications. A social networking site aims to build and maintain social networks or relations among people. It usually includes a representation of each user (a profile), his/her links, and several other services such as e-mail, instant-messaging,

tagging, etc. Social networking sites like Facebook, Google+, and Twitter have increasingly been popular in the last decade. However, the use of social networking media in education have remained rather limited (Hew, 2011).

4. The blended studio: a new model for design education

“Blended learning” is generally defined as the integration of traditional face-to-face learning with online learning, which makes it possible to benefit from the advantages of both teaching methods (Garrison & Vaughan, 2008). Blended learning courses are gaining much interest, with new technology being developed to complement, not replace, traditional forms of learning. Blended learning is viewed mostly as a promising alternative to traditional delivery modes and several of its advantages have been addressed in the literature such as improved student performance (Lopez-Perez et al., 2011), motivation (Lei, 2010), and capacity for reflection (Cooner, 2010). Moreover, it has been suggested that blended learning facilitates the review and control of learning (Osguthorpe & Graham, 2003) and provides greater flexibility in education (Macedo-Rouet et al., 2009). Despite its benefits, blended learning has not been explored and exploited in design education, yet. This paper hypothesizes that the blended learning approach can be successfully integrated with the traditional studio education. Pektas and Ozguc (2011) proposed that design media should evolve as a response to dynamic design contexts. They suggested that the proper media for design should be interactive rather than one-way. The use of new participatory tools (such as learning management systems, social networking media and other Web 2.0 tools) may transform the merely one-to-one interaction style of the traditional studio into a many-to-many style which corresponds better to the characteristics of new generation of design students. In this “networked” studio, the students are no longer passive “recipients” of knowledge but they actively construct it through continuous interaction with their peers and instructors.

The proposed model of the design studio coincides with social constructivist learning theories. Social constructivist learning refers to an educational process which enables groups to create knowledge and meaning through co-creation. Palincsar (1998) presented a review of the theoretical underpinnings of social constructivism which was developed in the intersections of psychology, sociology, and education. Social constructivism has been the theoretical basis for many studies in online learning and computer-supported collaborative work. With the advent of social networking media, social constructivism gained popularity in educational fields; however, its applications in design education have been rare. In fact, psychological and socio-cultural issues in design education were often ignored (Pektas, 2010), though they offer valuable opportunities for improvement. Therefore, the blended design studio presented in the next section was designed and implemented within the theoretical framework of social constructivist learning and by the help of educational technology.

5. An analysis of an exploratory blended design studio

The exploratory blended design studio was realized so as to enable collaboration between interior architecture students of Bilkent University, Turkey and East Carolina University, USA. The aim of the project was to introduce students to green and sustainable building design principles through real-life problem solving as teamwork. The project spanned five weeks in a semester and consisted of two modules. The first module utilized only traditional face-to-face teaching and the second module comprised a blended approach in which traditional and online distance education techniques are combined. The students formed groups of five students and each group was assigned to design a partially self-sufficient accommodation unit in a specific climatic zone. The students did research related to the project, presented them to the class, produced initial design ideas and discussed their projects with the instructors. Then, each team was paired with two students from the other university who worked as consultant for their group for the rest of the project. Collaborative work across the groups took place in the LMS discussion forums and in Facebook in the form of asynchronous online text communication and through sharing images and drawings related to the projects. Moodle learning management system was used in the study. Besides discussion forums, news and announcements were also shared through Moodle. In this study, social networking media was not devised as a

collaboration tool at the beginning; however, it was observed that most of the participants used Facebook, so it was included in the survey. Videoconference sessions were also organized for group meetings.

At the end of the study, data on demographics and students' comparisons of their teamwork experiences in the blended design studio vs. traditional studio were collected by a questionnaire.

6. Results

6.1. Participants

The responses of 42 participants (30 females and 12 males) were complete and included in the analysis. The ages of the participants ranged from 21 to 26 and the mean age was 22.87 (SD = 1.47).

6.2. Comparison of teamwork experiences in traditional and blended studios

The participants were asked to compare their teamwork experiences in the blended studio with their similar experiences in the traditional studio on a five-point Likert scale. In this scale, 5 denoted that such experiences were much better in the blended studio and 1 indicated that the experiences were much worse in the blended studio, compared to the traditional one. The results showed that the students' teamwork experiences were better in the blended studio ($X = 3.93$, $SD = 0.86$, one-sample $t = 6.81$, $p < 0.001$). The participants were also asked to share the reasons for their evaluation as a short essay. The answers were pooled and analysed independently by two evaluators. Emerging themes were identified and then discussed to reach a consensus about them. Discussion and refinement of the thematic categories were an iterative process and continued until total agreement was reached. In order to conduct quantitative analyses, students' responses were assigned to one or more categories. The final categories, their distributions and the illustrative quotes from participants ascribed to the particular categories are presented in Table 1.

Table 1. Participants' comparisons of their teamwork experiences in the blended vs. traditional design studio

	n	% of responses	Illustrative quotations
The teamwork experiences in the blended design studio were better than teamwork in the traditional design studio.	18	53	“Group work in the blended studio was better, because we were able to discuss our projects everywhere and every time.” “I think [that] the blended method is the best for team work. Because, it has advantages of both traditional and online.”
The blended approach provided opportunities for more effective sharing of design ideas/process in the studio.	14	41	“It was nice to see all of the design discussions on the Moodle. This is not possible in the traditional studio.” “We shared information more easily. We also observed what other groups were doing.”
The blended approach provided opportunities for more social and/or cultural interaction among team members.	8	24	“Meeting with another culture was good.” “Besides completing a project, we made new friends. It was fun.”
Some communication/coordination problems in the blended design studio soured the experience.	6	18	“The time difference between the two countries was a problem.” “It was difficult to manage the project: limited time, many things to do.”
Online communication is not appropriate for teamwork.	3	9	“In my opinion, online discussion is not good for group work.”
Total number of responses	34	100	

7. Discussion and Conclusion

This study revealed that the blended design studio was perceived positively by the participants. Several students mentioned that the blended approach was well-suited to their needs and preferences. Teamwork in design education entails intensive sharing of design documents and ideas. The learning management system used in the study provided easy and convenient access to all design-related resources such as project brief, research presentations, guidelines, etc. The discussion forums of the learning management system and Facebook provided opportunities for design communication without the limits of time and geography. Another advantage of the online discussions was rendering the process explicit. In the traditional design studio, design processes and documents of the students are shared on a temporal basis. However, online tools enabled students to observe processes of other students/teams to be more aware of the context of the project. It should be noted that, although this functionality was appreciated by most of the participants, a few students mentioned that they did not prefer such a level of accessibility/openness in the studio.

Besides working on the project, the blended approach utilized in the study provided opportunities for the participants to interact socially and culturally with their peers. It seems that social interaction in the blended studio motivated the students who value being “networked” with their friends. Furthermore, many students mentioned that working with the online tools was “fun”. Seeking fun and stimulation is a characteristic of digital natives and it is very likely that their enjoyment with the online tools contributed to the high level of attendance and participation in the activities of the blended design studio.

Some communication or coordination problems were also reported such as time difference between the two countries, the difficulties in managing a group project in limited time, and problems with using the online tools. In fact, managing a blended design studio is a challenging task. Due to the nature of the tools used, such studios require 7/24 participation and guidance. Although the educational process was carefully planned and structured at the beginning in our example, many problems had to be resolved as they arose. Hence, further studies on the planning and management aspects of the blended studios are much needed.

The blended design studio also requires constructive involvement by the instructors. In our study, it was observed that some instructors were reluctant to integrate new methods to their teaching practices. Design instructors' resistance to new technology was addressed by previous research (Pektas, 2007 and 2006). Robertson et al. (1995) defined three possible explanations for the negative attitudes of teachers toward computer applications. A major reason is the conservatism, and another is the anxiety of instructors caused from having to introduce more innovation to their teaching. The third possibility is that the teaching staff and students may have different perceptions about such applications. The students may see them as utilitarian high-tech devices and the teachers may perceive them as potential pedagogical tools that they are not adequately prepared to use. The success of the efforts for integrating new technology with design education largely depends on the attitudes of the related parties. Thus, this paper suggests that instructors' attitude is another issue that should be taken into account in further studies.

This study showed that the proposed framework for a blended design studio can be used to develop learning environments which are consonant with the needs and preferences of current generation of students. The author hopes that this study would facilitate for further studies in this track.

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