Hybrid Design Studios: Classrooms of the Future

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1. Introduction

A teacher is writing on a whiteboard. Behind her, neat rows of students sketch shapes and patterns on paper at tables lined up in neat rows. In another room, a group of students cluster around an instructor demonstrating how to construct a sculptural form out of cardboard. This brings to mind an image from a time gone by, not a progressive classroom in the 21st century. Doing things by hand seems passé in a tech-heavy culture of multiple networks, laptops, iPads, and Blackberries. Yet, the studio instruction model for schools of art, architecture and design has essentially remained unchanged. This paper examines an integrative, hybrid teaching model that blends traditional teaching methods with web-based technologies in the university design studio environment.

A few words about terminology: "traditional teaching" is defined as face-to-face contact with hands-on, active learning without the assistance of computers or the internet. Computer-based "online instruction," often called non face-to-face instruction, distance learning, e-learning, or virtual learning is a different method that replaces the physical presence of the instructor. When traditional teaching is combined with computer-based teaching, it too has many names such as, blended learning, modified studio, e-studio, or web-based. This paper accepts the term used predominantly today, "hybrid" [4].

1.1 The changing design studio environment

Traditional methods of studio instruction involve a "master and apprentice" approach with teachers providing guidance, demonstrating procedures, evaluating student work, and assigning final grades [19][21]. Some have questioned whether a traditional, master-apprentice teaching approach is an efficient method of teaching design to a new generation of students [5][9][14].

Design studio environments are active learning spaces that employ a variety of creative problem solving exercises in order for students to explore, experiment, and re-construct concepts into concrete solutions [7][10]. However, many "non-digital" exercises such as observing precedents, analyzing materials, drawing sketches, and building 3-dimensional models have become easier to accomplish using computer-based tools. Computer-aided drafting (CAD) applications, rendering software, plotters, digitizers, and scanners have nearly replaced pencils, drawing boards and many hand-tools found in the traditional studio [2][16]. These computer tools have become more sophisticated resulting in greater dependency by professionals in real-world scenarios, who expect new graduates to be equally technologically proficient. Students who are already computer-savvy recognize the value of technology and "expect it" to be embedded in their education [8][15]. In this way, technology is changing the way studio curriculum is structured, what is taught, and how it's delivered [19][21]. The question arises "Do the virtual promises of technological tools *enhance* or *exacerbate* the physically interactive, traditional studio environment?"

1.2 Integration of Technology into Studio Teaching

Online students must work independently without immediate physical input from the teacher.

Garrison and Kanuka [13] argue that blending technology with physical teaching methods creates a low-risk strategy that will prepare universities for the "onslaught of technological developments that will be forthcoming" [p. 96]. They suggest combining "virtual" tools with physical hand skills supports an interactive learning process which engages the student in ways not possible in the traditional studio model [20]. Today's students, (the digital natives) are already proficient at using the internet as a source for information [11]. Many physical tools are already part of the students' technological vocabulary, such as YouTube, Adobe Connect, Google Docs, Facebook, and Skype. These technical tools may change over time, but the benefit is their ability to increase teaching effectiveness beyond the limitations of traditional studio classrooms. A hybrid enables teachers and students to utilize these skills and thereby provides additional teaching opportunities. For example, teachers can record demonstrations and critiques and share them with students who then participate in online discussions.

Garnham and Kaleta [12] found integrating technology into traditional teaching brought positive outcomes, that hybrid instruction allowed instructors to accomplish course learning objectives more successfully than traditional courses and improved overall learning. "Instructors reported that students wrote better papers, performed better on exams, produced higher quality projects, and were capable of more meaningful discussions on course material" [par. 8]. Other studies reported similar benefits of increased student learning, knowledge retention and transfer [23]. These examples provide positive evidence for integrating technology into studio classroom teaching.

2. Hybrid Instruction: Summary of Benefits & Challenges

Even as this article is written, current computer applications identified may become outdated. Similarly, teachers trying to keep up with the wave of technology entering today's classrooms face a never-ending uphill battle. But, is there a possibility that technology is being oversold? What are the benefits and challenges as educators seek to find the proper application of technology in studio environments? The following summary discusses the benefits and challenges of a hybrid design studio.

2.1 Benefit: Choice of synchronous and asynchronous learning environments

Synchronous instruction, where teaching and learning occurs concurrently, is different from *asynchronous* learning which enables students to participate at separate times of their own choosing. One advantage of asynchronous learning is greater flexibility. [7][19]. In asynchronous, online studios neither the educational content or learning opportunities are bound by the time and space limitations of traditional media or classrooms. Online instructional components free both student and teacher from the constraints of studio course hours managed by schedule and classroom availability. Flexible, asynchronous learning environments have also proven beneficial in enabling students to meet the demands of career and family while continuing their education [2][18][22]. Teachers must seek the proper application of asynchronous technologies without losing the positive synchronous aspects of the studio.

2.2 Benefit: Vast number of online resources
Technology provides a conduit to a vast number of learning resources. Students can access seemingly boundless amounts of information from databases, online journals, open-source instruction and digital resources [1][7]. Bender and Vredevoogd [5] believe student learning can be enhanced by having pertinent resources available online whenever the student needs to access it. They also see technology making instruction less repetitive and more streamlined, especially in the use of recorded demonstrations and teacher-recorded, online critiques [p. 121].

2.3 Benefit: Crossing boundaries with collaboration
Design professionals regularly work in multi-disciplinary, collaborative teams. Students, however, predominately work independently. Karakaya and Senyaph [14] stress the need for higher education to provide more opportunities for students to work in groups to develop multidisciplinary, collaborative skills [p. 101]. Technology can support collaboration across boundaries of distance, time, and economics. Online collaboration can bridge diversity by sharing information between students in different regions, languages, and cultures [19]. Collaborations via email, chats, blogs, wikis and other accommodations provide students with a variety of feedback from outsiders, consultants, and subject matter experts [16][19][23].

2.4 Challenge: Lack of teacher proficiency
Despite the growing number of teachers using online resources, many are still unfamiliar with the methodology of teaching web-based curriculum. Technology is often used merely as a content tool; rather than a facilitator of learning [1][2][7]. "Uploading a course syllabus" does not mean a course is "online" [15][16]. There is clear need for greater research on teacher's perceptions, competencies, and development of technology-supported curriculum.

2.5 Challenge: Adopting new teaching / learning skills
Some students may know only traditional teaching methods. These students may therefore need to be taught appropriate online skills and behaviors [5][25]. Studies have shown the importance of not only teaching a student how to use online courseware but also how to learn in an online environment [14].
Technology does not guarantee better student productivity. However, technology can increase a student's design awareness through economies of time and user-oriented instruction [19].Students need to maintain "virtual" contact with their online teachers the same as in a face-to-face format. This is accomplished by regularly "logging in" as well as developing online components that provide extra scaffolding to complete difficult tasks [6][8].

2.6 Challenge: Online communication barriers
Teachers must recognize the differences between physical and non-physical communication. Face-to-face learning has the communicative advantage of the body's spoken and non-spoken cues. When engaging with students online, however, instructors need to be cautious about student emotions especially when critiquing student projects. Simple misunderstandings can strain student confidence causing groups to fall apart [10]. A balance between physical and non-physical (online) communication channels will increase course effectiveness [15].

2.7 Challenge: Lack of individual responsibility

Traditional, face-to-face instructors manage student progress by routinely seeing their students' progress and making course corrections when needed [5][21]. However, a study by Yin, Urven, Schramm, & Friedman [24] found that one-third of online students lacked individual responsibility and performed worse than their face-to-face counterparts by failing to submit their assignments [p.5]. The researchers attributed this phenomenon to not having the physical presence and daily routine found in traditional classroom settings.

Learners in hybrid face-to-face and online classes must compensate for the lack of face-to-face teacher interaction. Research indicates students who are responsible learners with strong organization, motivation, and discipline skills can overcome these challenges [19][23].

3. Discussion: New Methods Require New Skills

Online components, sophisticated computer tools, and technological collaborations provide obvious course enhancements, but should not overshadow the role of an effective teacher. Technology complements teaching effectiveness as teachers design appropriate learning experiences around the needs of the student [18][19][22]. However, new methods require teachers to learn new skills. [9][22]. Because online teaching is so different, even an experienced teacher will require considerable technical structural support [4]. Administrators must make teacher preparation a priority as they implement new technologies into the classroom of the future [5][6][25].

Teachers can't do it alone. Researchers like Olliges and Mahfood see the success of hybrid studio classrooms dependent upon a collaborative environment that encourages technological experimentation and accepts failure [17]. Chickering and Gamson stress hybrid courses should communicate higher student expectations, but also include a greater amount of structure, diversity, and contact between students and faculty [3]. Teachers and administration must work together to develop new strategies and resolve complex technical, structural, and pedagogical issues of hybrid instruction.

4. Conclusion

Technology has moved at breakneck speed impacting students, teachers, and universities. Teaching online studio courses is a challenge as more design educators embrace new technologies. The studio provides a creative environment for students to experiment and learn. Educators must seek the proper application of technology without losing the positive hands-on aspects of the studio. Online instructional models and computer based tools enhance the studio classroom. A hybrid approach which blends traditional studio instruction with technological applications can be beneficial to students. Hybrid studios optimize student learning potential by providing access to the unlimited resources of the Internet. There are some barriers to overcome, both for the student and the instructor, but, it is evident that many are aware of the advantages technology provides and will continue to use it in the foreseeable future.

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