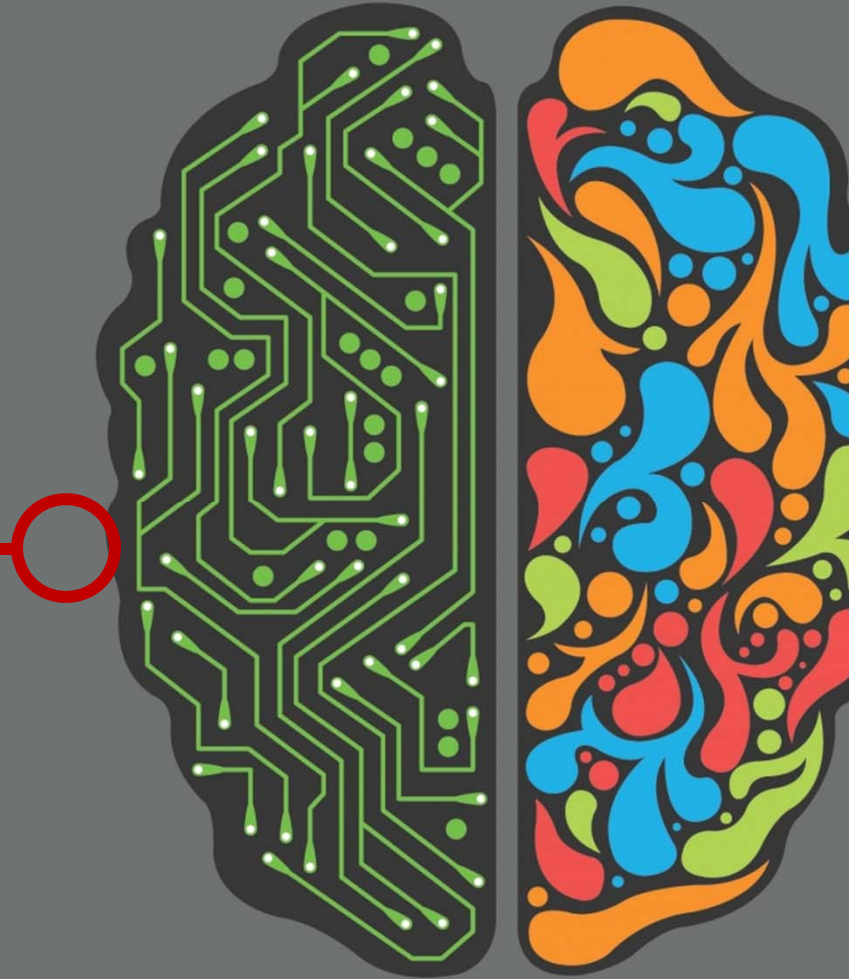


Designing with Digital Media

Tilanka Chandrasekera | Assistant Professor
Department of Design Housing and Merchandising | Oklahoma State University



Designing with Digital Media

2013 Innovative Interior Design Education Award

Introduction

I have taught in the **Department of Architectural Studies at the University of Missouri** and I am currently an Assistant Professor in the **Department of Design, Housing and Merchandising at Oklahoma State University**. Both of these programs are **CIDA accredited**.

I am an ardent advocate of **digital media**. I like to experiment with different technologies and tools to see if it can make life easier. There is no use of teaching the same thing, the same way it has been taught 100 years ago. Teaching methods need to be updated and should relate to students. **Motivation** is a strong factor in education and students can be motivated by relating to their day to day life so that subject matter does not seem alien.

Design, Design communication and Design practice are interconnected and all three areas are covered in design education. This narrative is an attempt to showcase different methods that I have used **digital tools in design education**.

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2013 Innovative Interior Design Education Award

Introduction

In this presentation I have included the following courses I have taught as examples for using **Digital Media in Design and Design Education**

1. Drafting and working Drawings
2. Digital Design Communication
3. Design Studio
4. Professional Practice for Interior Designers

These courses were specifically chosen to show a progression from student to practitioner in the profession of Interior Design, Rather than being a traditional narrative of how students have or are using software for design, this is an attempt to see how these new digital tools can be incorporated as educational tools to *help* the instructor and the students.

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Graduate Instructor and Teaching Assistant -University of Missouri Columbia

Assistant Professor- Oklahoma State University

Design Communication

Design

Design Practice

Drafting and Working Drawings

Design Communication

Design Studio II

Professional Practice for Interior Designers

Manual Design Communication

Digital Design Communication

Design Studio

Professional Practice

Drafting techniques

Perspectives

Sketching

Working Drawings

3Ds Max

Sketchup

Photoshop

Illustrator

Communication

Development

Modeling

Virtual Critique

Student Exhibition

Augmented Reality

Virtual Reality

Digital Presence

Social Networking

Portfolio Development

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Manual Design Communication

Design Communication

Strategies Used

Whiteboard overlaid with powerpoint projection

Blog

Youtube videos

Mobile app

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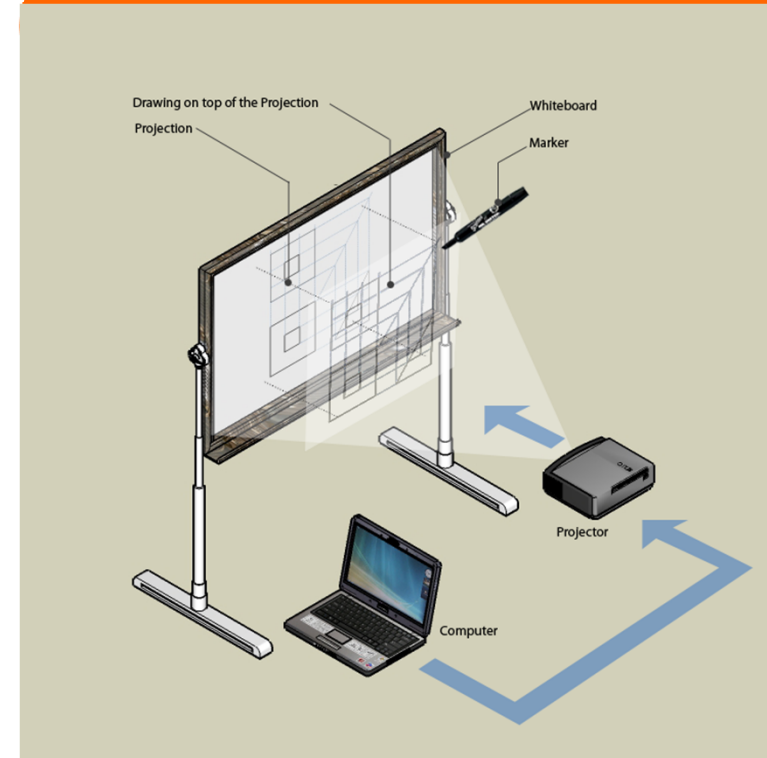
Manual Design Communication

Design Communication

A step by step graphical instruction set was made with power point, then it was projected on to a white board and using a marker the instructor drew on top of the projected images on the whiteboard. Drafting is a hands-on subject, and can be taught only through doing. By going over the lines the students knew exactly what to do.

[excerpt from student reviews] A teacher of drafting cannot just explain how to draw an architectural drawing; it must be shown and explained simultaneously. Using the white board and the projector I was able to see, multiple times if needed, how to develop the drawing correctly, step by step. – Annie Hall (Student)

Whiteboard overlaid with powerpoint projection



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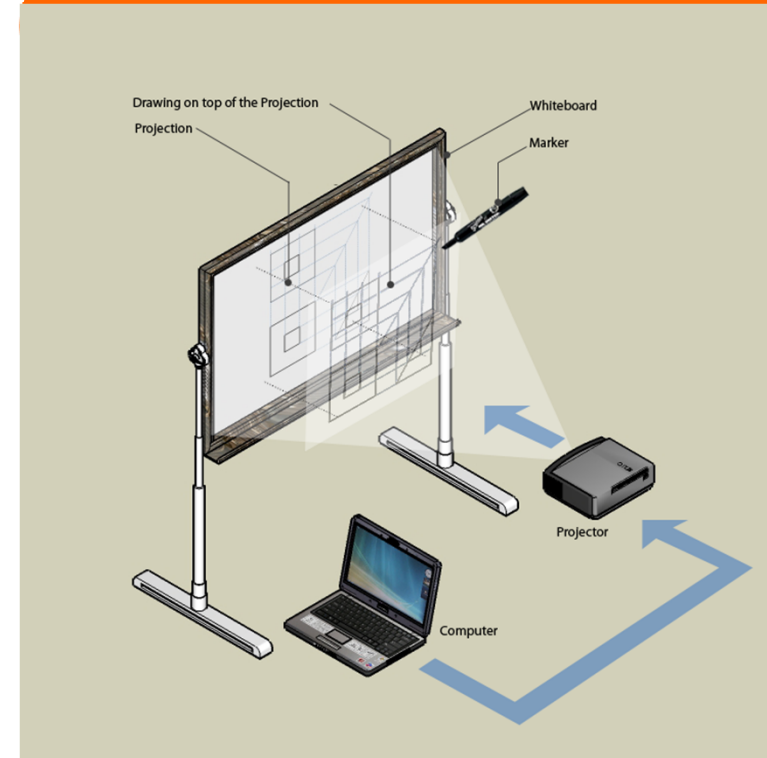
Manual Design Communication

Design Communication

Advantages as compared with the traditional method of drawing on the whiteboard without projection :

- >Can go over the same set of instructions multiple times
 - >Can zoom into portions of the drawing
- >Larger projection size makes it easier for the whole class to see it.
- >Student were able to come to the board and draw on top of the drawing while asking specific questions
 - >Every line is accurate

Whiteboard overlaid with powerpoint projection



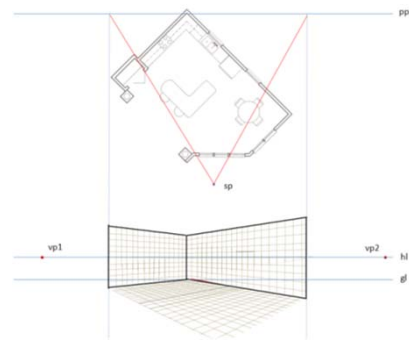
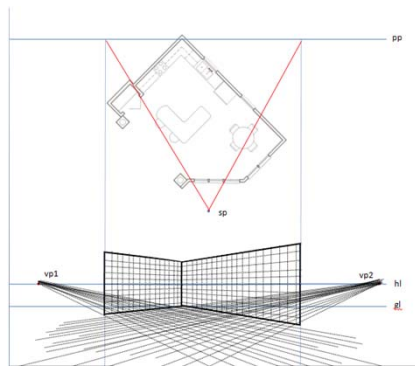
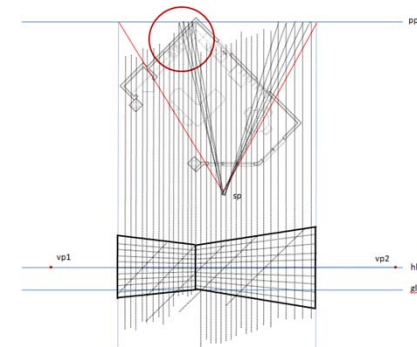
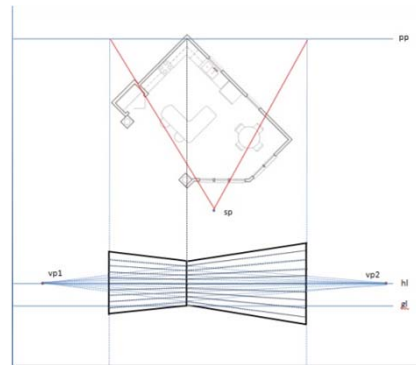
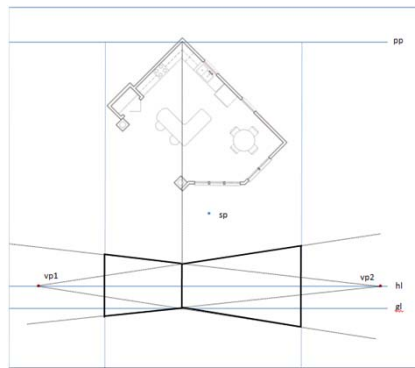
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Manual Design Communication

Whiteboard overlaid with powerpoint projection

Design Communication



A two point perspective lesson: sample screens from powerpoint

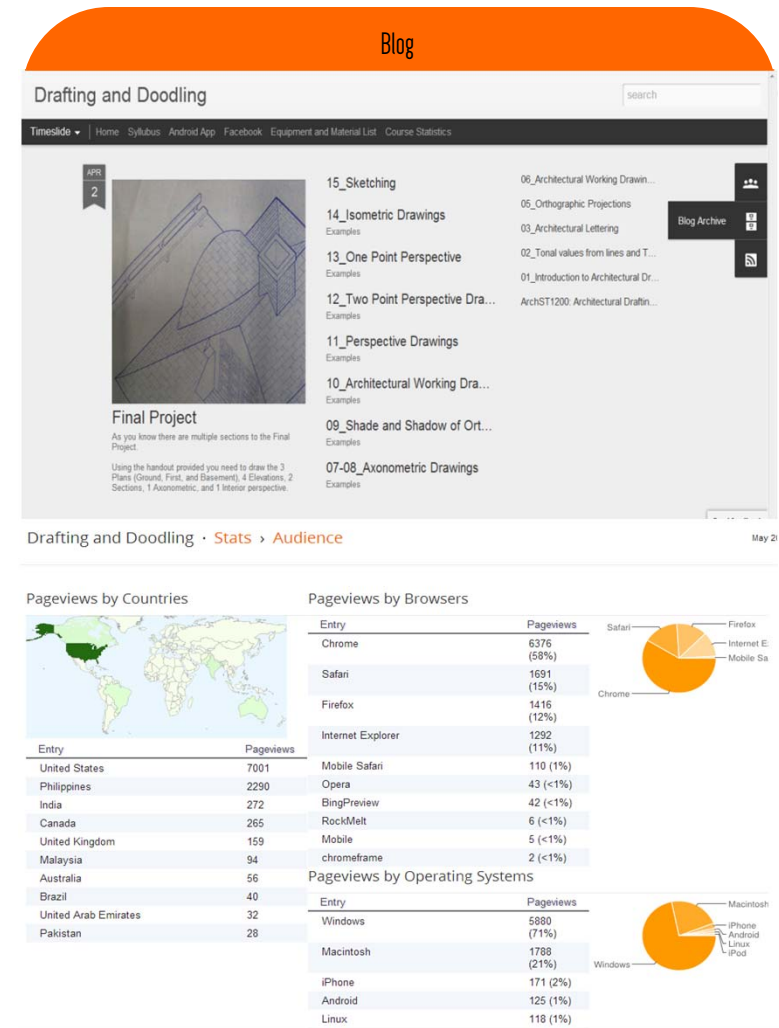
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Manual Design Communication

Design Communication

The blog contained the syllabus, links to the app, links to the course facebook group, equipment required by the course (with useful information about each one) course statistics and the lessons. There were two versions of the blog, a mobile version which automatically was accessed through mobile web browsers and the normal version. The statistics show that the blog has been accessed by the student a lot; even after the conclusion of the course.



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Manual Design Communication

Design Communication

All the lessons were converted from PowerPoint to video format and uploaded onto YouTube. Majority of electronic devices can play YouTube videos as compared to PowerPoint slides or flash based websites that host presentations such as slide share. These videos are then referenced by the mobile app made for the manual drafting course and the blog. Drafting is a course that teaches students about the fundamentals of drawings, and these instructions help the students throughout their career, so it is important to have the material on a publicly accessible site.

Youtube Videos

The screenshot displays the YouTube channel interface for 'draftingmizzou's channel'. At the top, it shows the channel name, a profile picture, and statistics: 0 subscribers and 331 video views. Below this is a search bar and tabs for 'Feed' and 'Videos'. The main content area lists several videos:

- Axon final project**: 42 views, 2 months ago.
- 05_Orthographic Projections.avi**: 20 views, 5 months ago.
- 02_Tone.avi**: 8 views, 5 months ago.
- 03_Lettering.avi**: 8 views, 5 months ago.
- 14 Isometric**: 32 views, 5 months ago.

On the right side, there is an 'About draftingmizzou's channel' section with details: 'by draftingmizzou', 'Latest Activity Apr 1, 2012', 'Date Joined Jan 10, 2012', 'Age 40', and 'Country United States'. There is also a '+ 1 more' link for each video and an 'Other Channels' button.

Designing with Digital Media

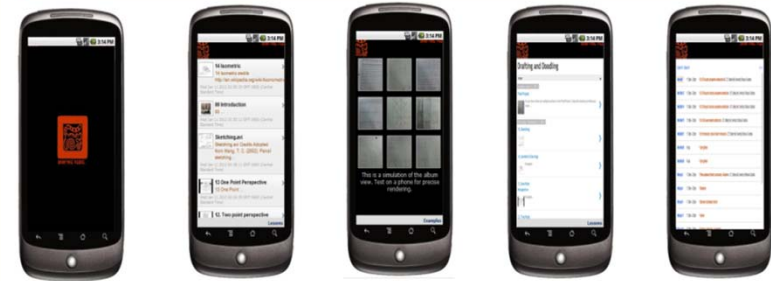
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Manual Design Communication

Design Communication

It is important to try and use mobile technology in classes, which would allow the students to communicate with the course content and with one another. Even when there are no means of access to a computer, a mobile app can be used to serve the same purpose in answering questions. Manual drafting is a very “hands-on” course and computer usage is minimum. Having access to all the course content on your smart phone allows a student to understand a problem and constructively derive solutions.

Mobile App



All lessons integrated in to the app in video format

Examples integrated into a gallery

mobile version of blog loads in to app

google calendar provides notifications of lessons and submissions

Designing with Digital Media

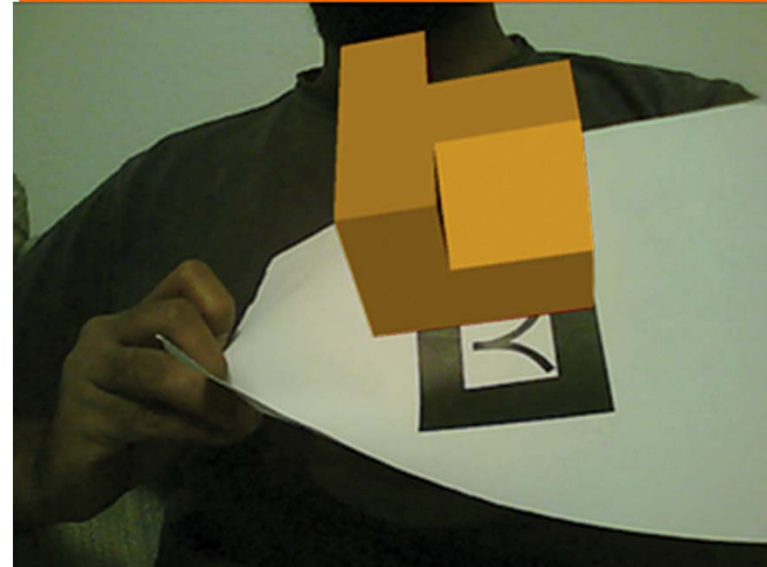
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Manual Design Communication

Design Communication

The instructor conducted a study on how Augmented Reality can be used in drafting and to see if there were any benefits of using such a technology. In the study, 11 students from the drafting course were recruited. An experiment was designed for instructing orthographic techniques to students using augmented reality and virtual reality which was compared with the traditional instructional method. Within the limitations of the study it was shown that student's mental rotation ability improved in the method which used AR than other methods. Even though not statistically significant, technology acceptance was higher in the AR method.

Augmented Reality



The results of the study have been presented at a number of international conferences and is currently under review for an International Academic Journal

Designing with Digital Media

2013 Innovative Interior Design Education Award

Manual Design Communication

CIDA COMPETENCIES



CIDA Competencies addressed in this
course

Design Communication

- Use sketches as a design and communication tool (ideation drawings).
- Demonstrate creative thinking and originality through presentation of a variety of ideas, approaches, and concepts.
- Opportunities to develop critical listening skills.
- Exposure to various types of design practices.
- Create an awareness of a broad range of materials and products.

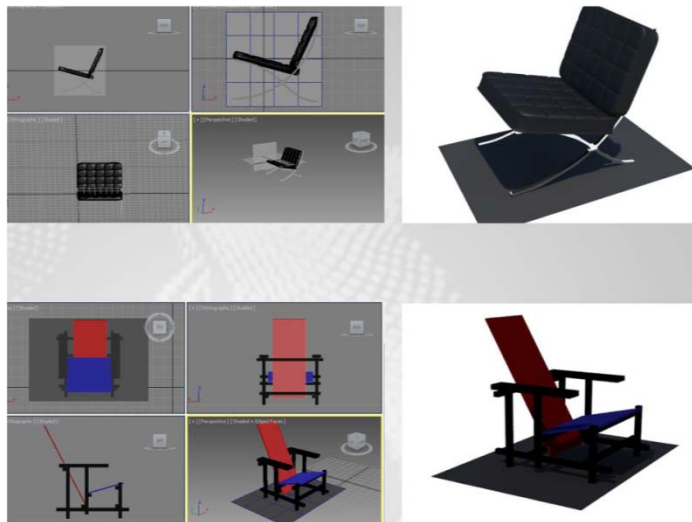
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Digital Design Communication

Design Communication

As a Teaching Assistant, I taught certain Sections in the “Design Communication” curriculum. The course was focused on how design students could use various digital design tools such as **3Ds Max, Sketchup, Adobe Photoshop, Adobe Illustrator.**



Digital Design Tools



Designing with Digital Media

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Digital Design Communication

CIDA COMPETENCIES



CIDA Competencies addressed in this
course

Design Communication

Use sketches as a design and communication tool
(ideation drawings).

Demonstrate creative thinking and originality through
presentation of a variety of ideas, approaches, and
concepts.

Opportunities to develop critical listening skills.

Exposure to various types of design practices.

Create an awareness of a broad range of materials and
products.

Designing with Digital Media

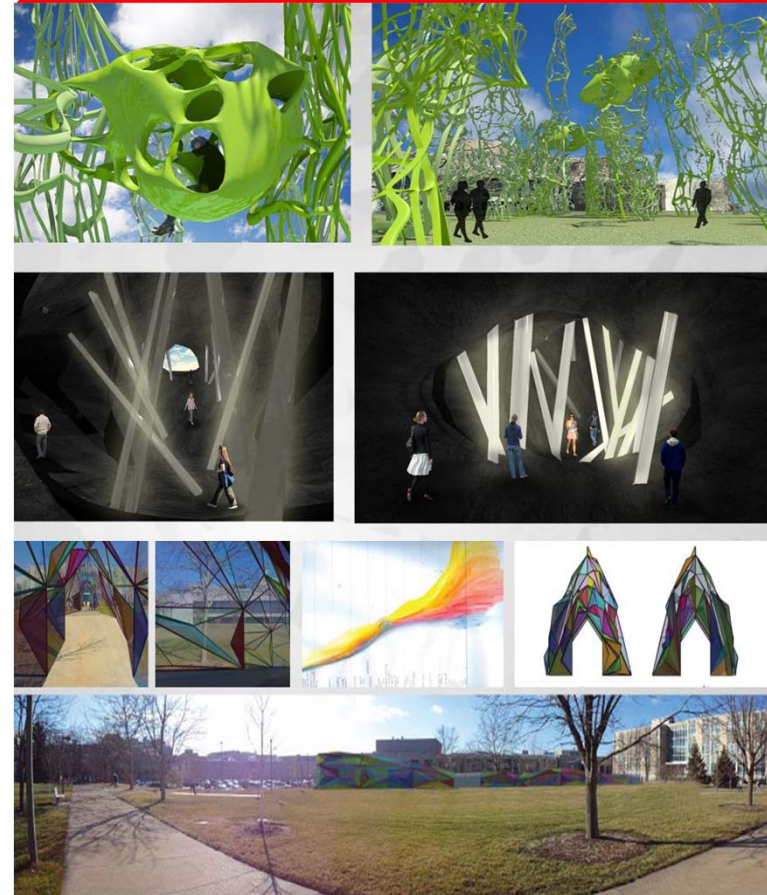
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Design Studio II

Project I: Monument for Love

In their first design project, students were encouraged to explore form and space through digital form manipulation using software's such as 3Ds max and Sketchup. Instead of making physical models they were instructed to create **Augmented Reality digital models.**

In this project, student chose a music piece that they liked and transformed the ambience of that music piece in to a physical spatial structure. The final product was to be a *"monument for love"*.



Designing with Digital Media

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Design Studio II

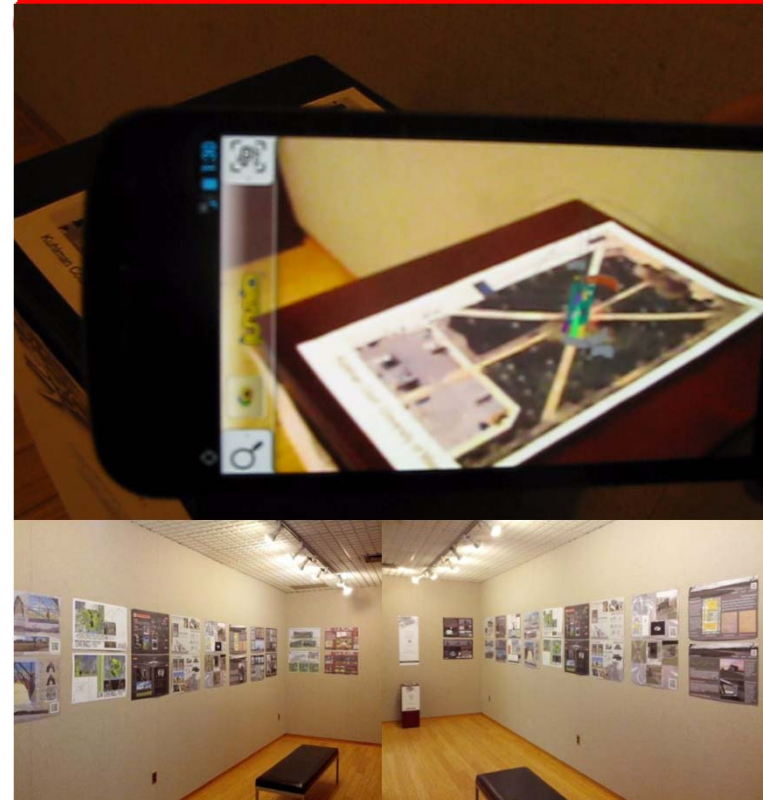
Design

Student's final designs for the "monument for love" was displayed in the *Roggers Gallery* at MU. They used **QR codes** so that the viewers were able to listen to the music [That the students used for inspiration] using smartphones. They also used a software called "**metaio**" which is an **Augmented Reality content builder for mobile platforms**, to make **Augmented Reality models** of their project. Visitors then could use their mobile phones to look at these Augmented Reality models.

Video Link

<http://youtu.be/UqkH6NNdSvI>

Augmented Reality Models



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Adventures in Education

We used the same Augmented Reality software used in Design Studio II, together with sketchup to teach children [aged 4-8] to use sketchup during an annual event called "*Adventures in Education at MU*"

They loved it!

Video Link

<http://youtu.be/wl1kEGLjSw>

Teaching Pre-K kids Sketchup



Designing with Digital Media

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Design Studio II

Project II: Exploratorium

In their second design project, students after selecting an Author, Artist or a Musician (Natives of Missouri), looked at their work, and life style to draw inspiration in creating an exploratorium.

Design



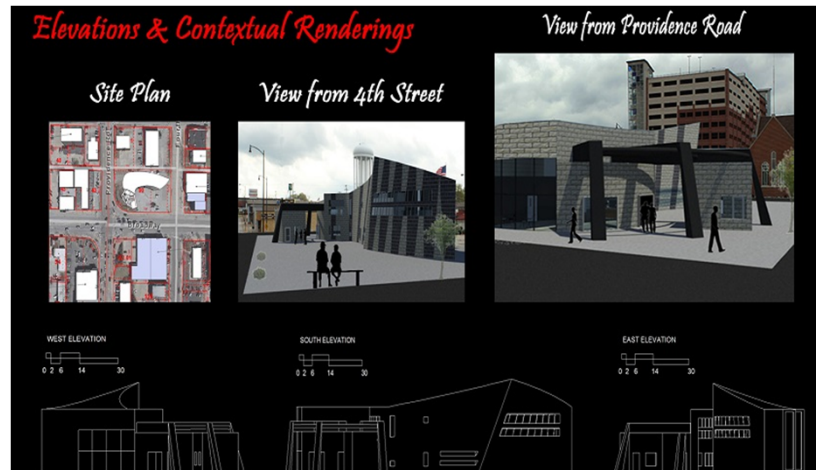
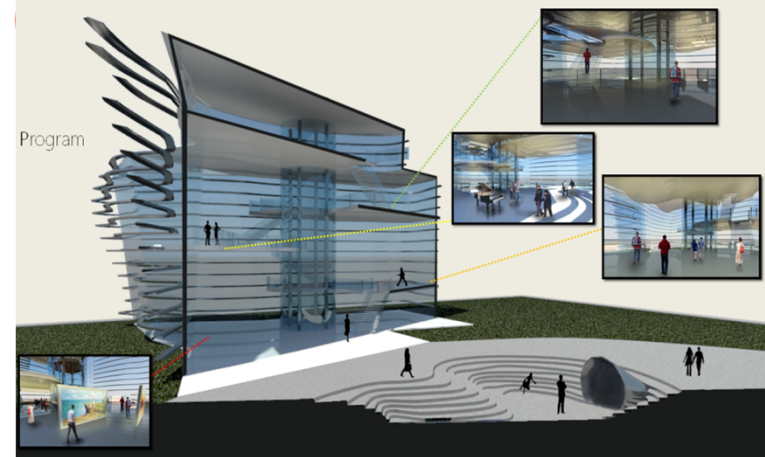
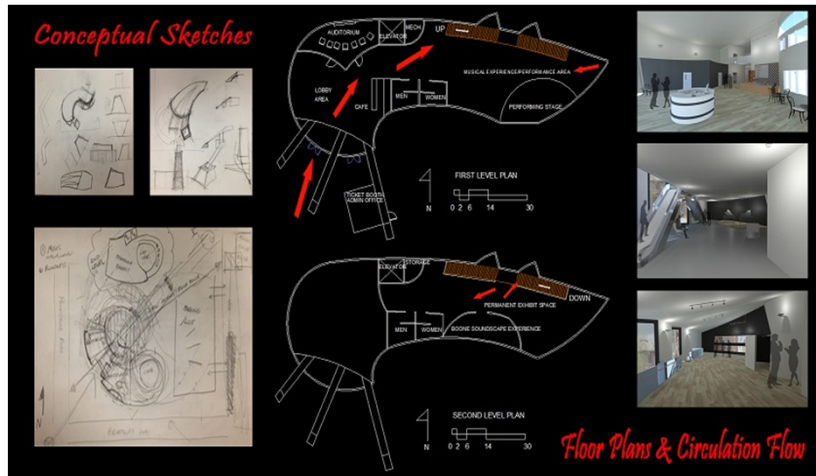
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Design Studio II

Project II: Exploratorium

Design

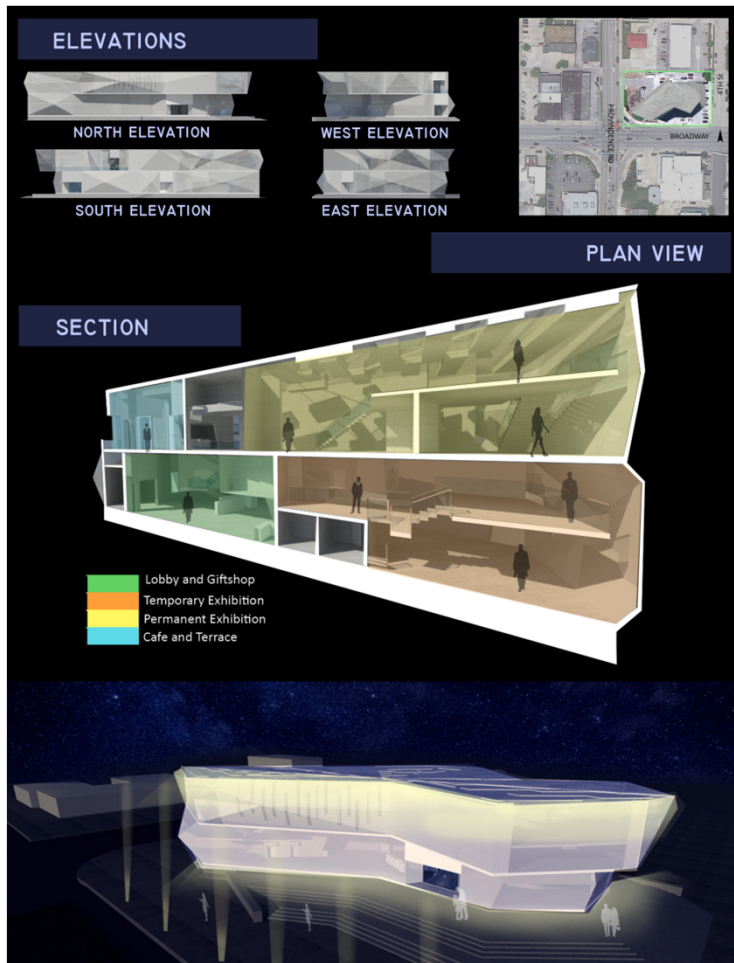


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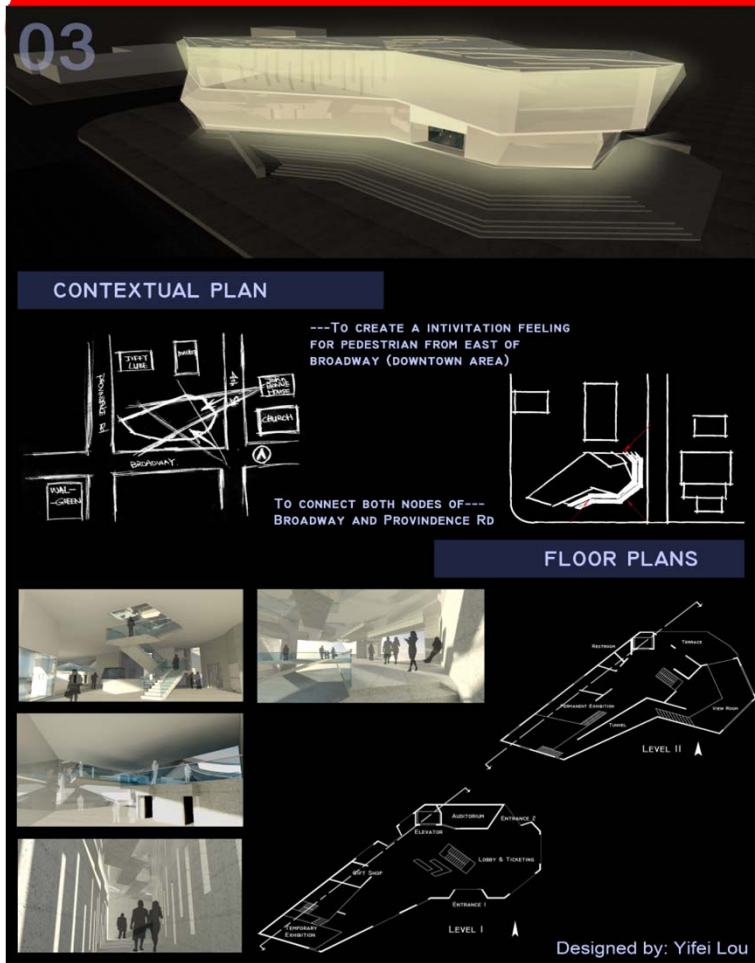
Design Studio II

Design



Project II: Exploratorium

03



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Design Studio II

Virtual Critique for the Exploratorium

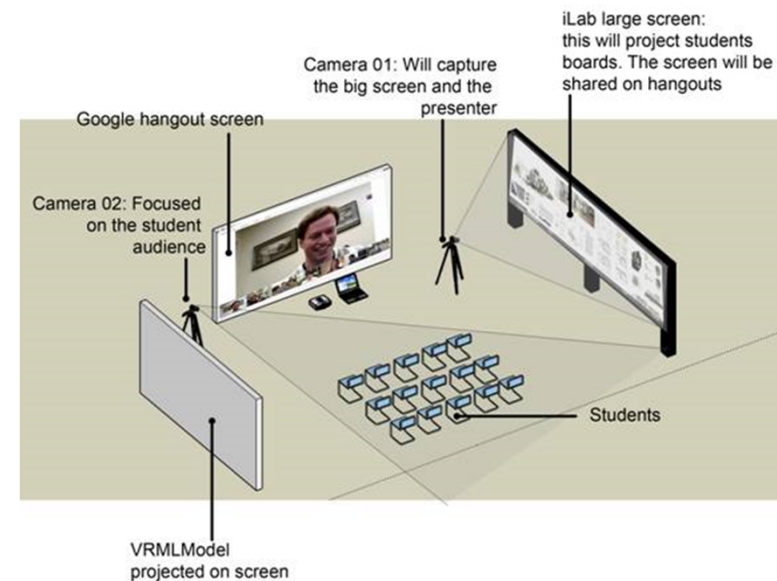
Virtual Design Studios and Virtual Design Critiques have been discussed in design education for some time, yet there have been some hesitation in adopting these in mainstream education. This was the first time that a Virtual Design Critique was conducted in the University of Missouri-Columbia. Professor Harsha Munasinghe from Toronto, Canada, and Professor Ji-Young Cho from Kent State University, Ohio joined as guest reviewers. Professor Harsha Munasinghe is the former Head of the Department of Architecture, University of Moratuwa, Sri Lanka who is on sabbatical and a Professor at the Centennial College, Toronto. Professor Ji-Young Cho is an Assistant Professor at the College of Architecture and Environmental Design at the Kent State University

Design

Virtual Critique



1. Critique 01
2. Critique 02
3. Camera 01
4. Camera 02
5. iLab Screen share
6. VRML Model



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Design Studio II

Design

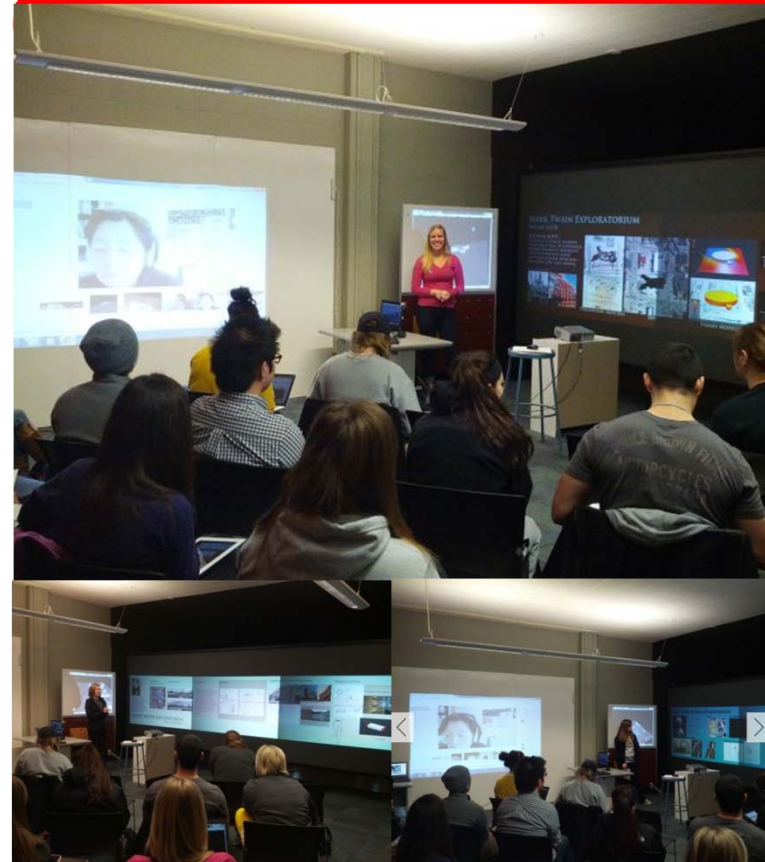
The virtual critique was conducted in the Immersive Visualization Lab at University of Missouri-Columbia.

The students presented their schemes on the large immersive screen. They used another screen to explain the VRML models.

An online critique form was used to record reviewers comments. Students also used these to provide their own critique of schemes. They used their phones, tablets or laptops to access the online forms.

Apart from sharing the screen of the VRML model, they were also placed online, and the links were provided for the reviewers, so that they were be able to manipulate the models and experience them remotely.

Virtual Critique



Designing with Digital Media

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Design Studio II

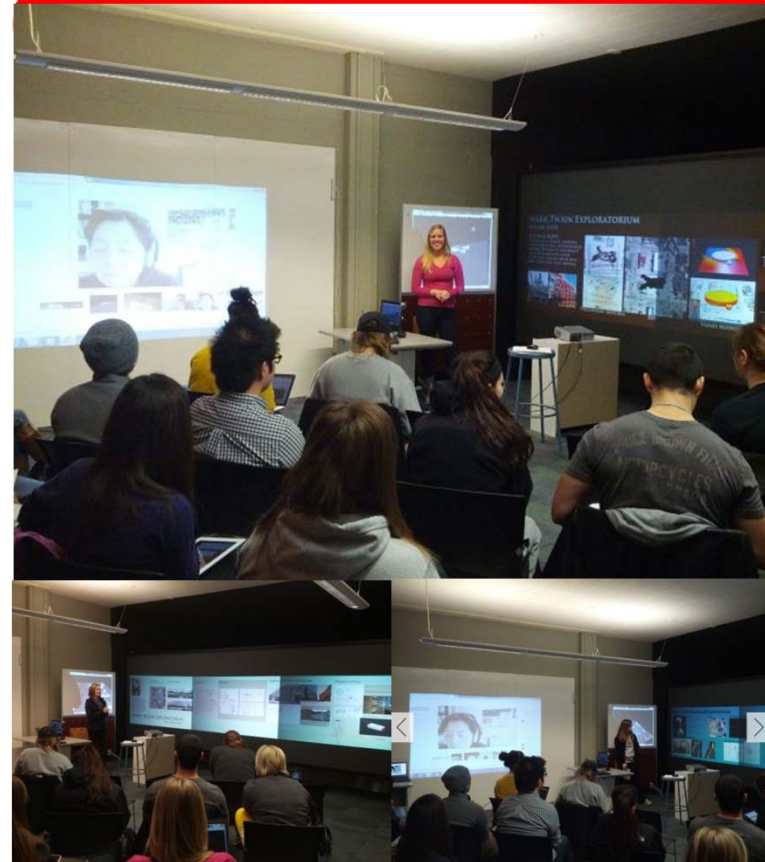
Design

In this course students were encouraged to work with three kinds of models

1. Physical working models
2. VRML models
3. AR models

Rather than making time consuming final physical models, students were asked to make working models so that the process of the design was evident as they met with the instructor. They were instructed also to develop VRML models for the virtual critiques so that the reviewers were able to remotely manipulate the models through a web browser. They were also introduced to developing Augmented Reality (AR) models to explore irregular forms.

Model Making



Designing with Digital Media

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Design Studio II

New digital tools

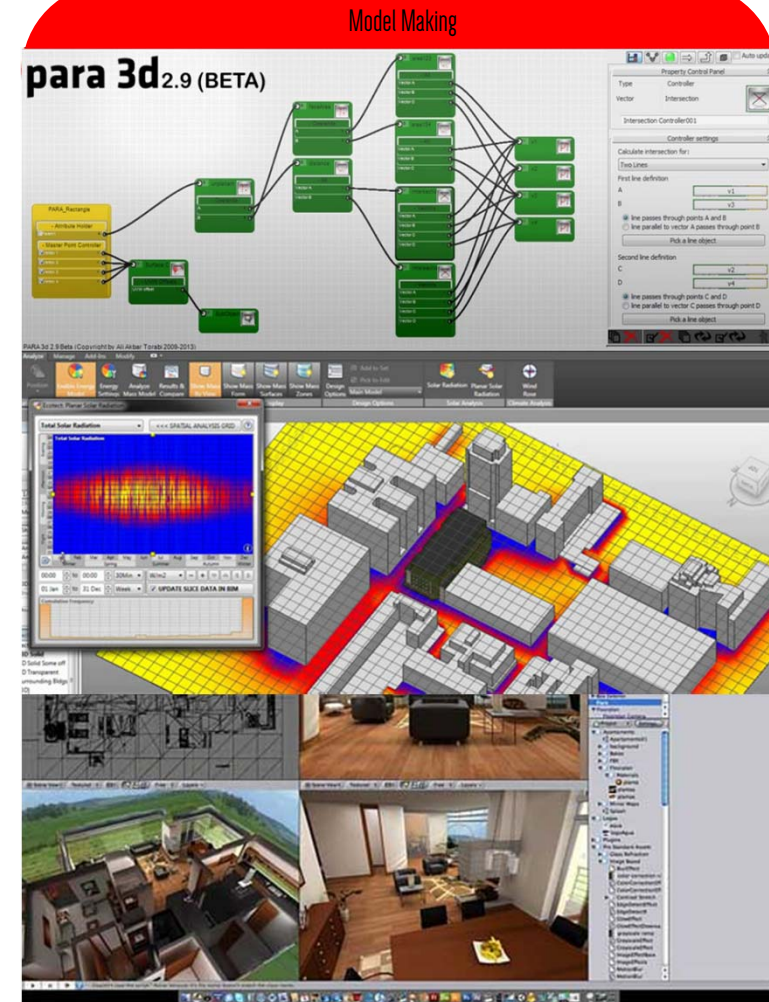
Students were introduced to an array of new digital tools to help them with their future designing profession

>Parametric Design tools : Para 3D plugin and populate plugin for 3Ds Max

>Stereoscopic 3D basic concepts and Introducing a stereoscopic plugin for 3Ds Max

>Vasari Energy Simulation tool for identifying energy consumption in the conceptual design stage

> Unity 3D for real time walkthrough simulation of interiors



Designing with Digital Media

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Design Studio II

CIDA COMPETENCIES



CIDA Competencies addressed in this
course

Design

Lighting Fundamentals
Application of two-dimensional and three dimensional
design fundamentals
Problem identification and solution
Identification of users' needs
Concept development and visualization through
sketching and rendering
Communication through oral presentation and written
explanation
Energy management
Regulations governing movement, fire suppression,
indoor air quality, noise and lighting.

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Professional Practice for Interior Designers

Design Practice

Professional Practice for Interior Designers a course which is presently being conducted at Oklahoma State University. In this course apart from the traditional areas covered by a course dealing with professional practice for interior design, students will be also be instructed on the importance of their **digital and online presence** as a professional and will be instructed on how to compose and manage **their digital portfolios** using software's such as **adobe photoshop and adobe illustrator**. They will also be introduced to different portfolio formats such as online standalone solutions to **personal websites** and flash based **presentation techniques**. Student will also be introduced to **social networking for professional practice**.

Digital Professional Practice



Designing with Digital Media

2013 Innovative Interior Design Education Award

Professional Practice for Interior Designers

CIDA COMPETENCIES



CIDA Competencies addressed in this
course

Design Practice

Provides exposure to a variety of business, organizational and familial structures;

Includes learning experiences that engage students in collaboration, consensus building, leadership, and team work;

Provides exposure to the role and value of:

Legal recognition for the profession;

Professional organizations.

Integrate oral and visual material to present ideas clearly.

Students understand

The elements of business practice (business development, financial management, strategic planning and various forms of collaboration and integration of disciplines);

The elements of project management, project communication and project delivery methods;

Professional Ethics.



As a design educator, I believe that making the connection between the digital realm and design education, considering design, design communication, and the design profession is very important. If we have new digital tools, and if they make learning more efficient, it makes no sense not to use them.

Thank you.

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