

# From Passive to Active Learners: Implementing the Pedagogy of “Learning by Doing” in a Large-sized Design Foundation Class

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## **Abstract:**

*This article examines the challenges and strategies used in promoting active learning and critical thinking in a large sized art and design course. It offers strategies in regard to course delivery, evaluation methods, as well as assignment design and speaks to the effects these types of courses have on students in their first year.*

## **Key Words:**

Design foundation course; large enrollment courses; active learning; “learning by doing”; critical thinking; interdisciplinary.

## **Introduction**

Without any doubt, large-sized classes are a challenge, particularly regarding course delivery, evaluation, and assignment design. More challenging is trying to address the negative outcomes associated with these types of classes. On the one hand, due to the difficulty of interacting directly with each student, faculty teaching large-sized classes, develop increasing dependence on the lecture format; additionally, in many cases, they feel forced to reduce the extent and depth of the course objectives and assignments. On the other hand, students respond by being less actively involved in their learning process and by not developing high depth of thinking inside or outside the classroom. In other words, large-sized classes encourage students to be passive learners instead of active learners who engage in critical thinking. Unfortunately, the effects these classes have on students transcend the duration of the course itself and leave a long-lasting imprint on students, particularly in freshmen. Despite the significant negative consequences large-sized classes can have in students’ learning habits, universities across the United States continue to push large-sized classes. Taking into account that our goal as educators is to promote and instill critical thinking skills, it is paramount for faculty teaching these types of courses to take into consideration the aforementioned results when addressing a large-sized class.

But how do we specifically address the challenges of a large-sized class, particularly when the course is interdisciplinary, a type of course with challenges of its own? *Art and Design* is a design foundation course required of all students pursuing a major in art and design fields at the University of Nebraska.<sup>i</sup> It has an average enrollment of 180-200 students. Earlier experiences had proved that lectures and readings alone were insufficient to meet the course's ultimate goal: to cultivate thoughtful, critical and active viewers and producers. Consequently, the implementation of the pedagogy "learning by doing" seemed pertinent to achieve the course's pedagogical objectives. This article exhibits, analyzes, and evaluates the teaching strategies explored in *Art and Design* to promote active learning in a large-sized class setting.

## Description of the Course

*Art & Design* (also known as *Visual Literacy Lecture*) is a one credit component of UNL's Visual Literacy program, an interdisciplinary basic design experience that engages all design majors (art, architecture, landscape architecture, interior design and textile design), art minors, as well as journalism majors with a minor in art.<sup>ii</sup> The program is composed of a lecture unit (*Art & Design*) and four studio courses (*Analysis & Composition*, *Perceptual Drawing*, *Speculative Drawing*, and *Color*). While each course is distinct, they all support one another in preparing students with the necessary skills and knowledge to face coursework in the disciplines of art and design. Additionally, they all require a careful selection of the pedagogy in order to introduce the diverse student body to design skills and concepts in an abstract manner without the specificity of a particular discipline.

*Art and Design* lays the foundation to understand the visual world giving the students the appropriate skills to analyze, judge, and evaluate visual artifacts, be they works of art, fine crafts, fashion, industrial design, and the built environment (including architecture and interior design). Ultimately, the goal of *Art and Design* is to cultivate thoughtful, critical and active viewers and producers. Thus at the completion of the course students should be able to:

- Recognize the elements and principles of two, three and four-dimensional design to dissect and analyze visual artifacts;
- Utilize a design vocabulary to describe and analyze visual artifacts;
- Learn about, and employ, various strategies to interpret and analyze visual artifacts;
- Understand the increasing importance of visual literacy in contemporary culture;
- Become more thoughtful, critical and active viewers.

To reach the objectives listed above, the course covers the following content:

- The design elements and principles in two, three and four-dimensions (definitions, types, and uses);
- The process to analyze visuals (what are the components, how are they used, what they can/may convey);
- Sketching of visual artifacts was considered part of the course content in spring 2008, given students' requirement to use drawing.

In contrast to the enrollment of the program’s studio components (15-20 students), the enrollment for this lecture course is estimated to be 180-200 students per semester (see Fig. 1). As all other Visual Literacy Program courses, the diversity of the student body of *Art & Design* is not limited to the different disciplines students are pursuing; the student body also presents a mixture of skill/knowledge levels. In rigor, students are expected to complete this course during their freshman year.<sup>iii</sup> However, as was the case in spring 2008, it is not unusual that in addition to freshmen (56.74%), sophomore (28.37%, several in their first year of a declared major), junior (13.47%), and senior standing students (1.42%) take this course bringing into the class an even greater variety of backgrounds (see Fig. 2). This mixture requires delivering clear explanations of the course material in order to reach the beginning students, as well as making connections to the studio components and build upon what more experienced students have learned earlier.

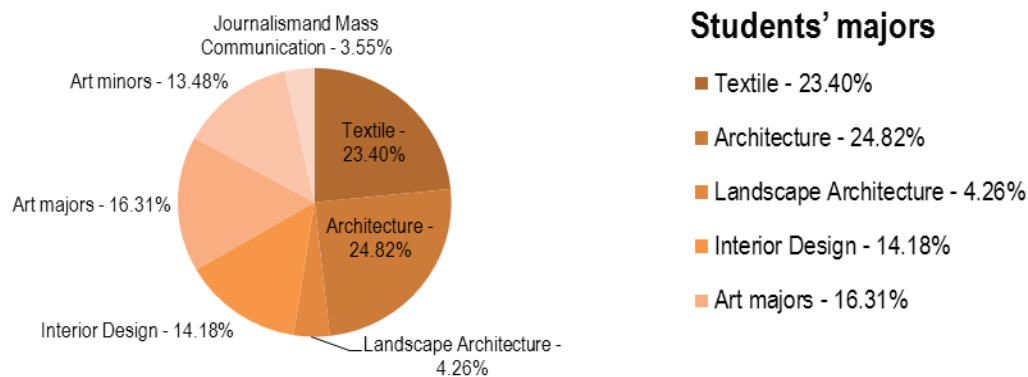


Fig. 1 - Distribution of Students based on their majors

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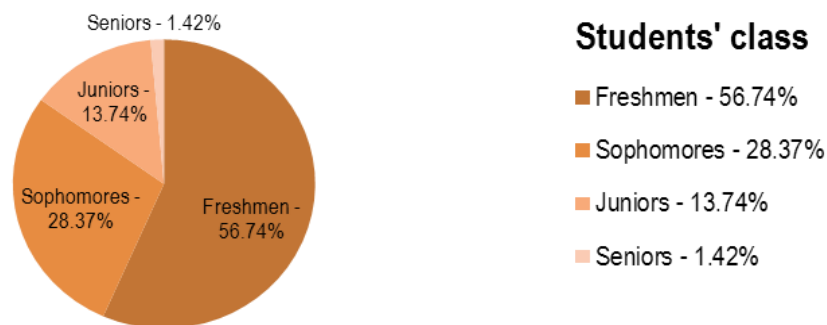


Fig. 2 – Distribution of students based on their class standing

### Rationale for the Teaching Methods, Course Materials and Activities

As stated in the introduction, large-sized classes are undoubtedly a challenge, particularly in regard to course delivery, evaluation methods, as well as assignment

design. More important are the effects these types of courses have on students, particularly students in their first year. According to Cuseo (2002), empirical evidence suggests that

there are eight deleterious outcomes associated with large-sized classes: (1) increased faculty reliance on the *lecture* method of instruction, (2) less *active student involvement* in the learning process, (3) reduced frequency of instructor *interaction* with and *feedback* to students, (4) reduced *depth of student thinking* inside the classroom, (5) reduced breadth and depth of *course objectives, course assignments*, and course-related *learning strategies* used by students *outside* the classroom, (6) lower levels of academic *achievement (learning)* and academic *performance (grades)*, (7) reduced overall *course satisfaction* with the learning experience, and (8) *lower student ratings (evaluations)* of course instruction (p. 2).

This results in students becoming passive learners—students who primarily memorize, rather than fully try to understand concepts—instead of active learners who engage in critical thinking. Furthermore, in freshmen, this scenario generates bad learning habits that will most likely persist throughout their years in college (Cuseo, 2004, p. 2). Therefore if our goal as educators is to promote critical thinking skills, it is paramount to take into consideration the aforementioned results when deciding on teaching methods and course activities for address the needs of a large-sized class.

Most, if not all, of the outcomes mentioned by Cuseo can be associated to *Art & Design*, as well as to the earlier versions Visual Literacy Lecture. *Art & Design* has consistently presented little student involvement, contrary to the engagement and participation students demonstrate in the program's studio courses; difficulties assessing students' comprehension and critical thinking skills acquired during the semester; and reduced depth in the materials covered. This is particularly critical considering that one of the course's objectives is precisely to teach students to be thoughtful, critical and active viewers.

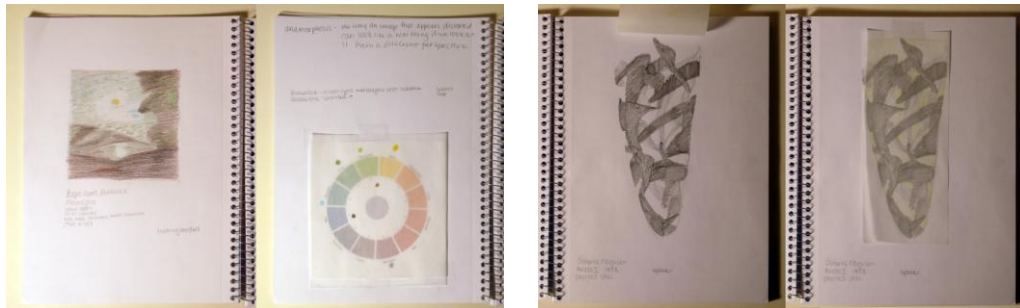
Efforts made since 2005 to improve the course (the preparation of clearer slide shows and handouts, as well as the incorporation of digital technology) had proved insufficient to meet the course's ultimate goal: to cultivate thoughtful, critical and active viewers and producers.<sup>iv</sup> Consequently, in 2007-2008 I proposed to explore new strategies that would encourage student thinkers rather than just listeners. Based on Cuseo's list of negative outcomes, my goals were

- to increase active student involvement in the learning process;
- to increase the frequency of instructor interaction with and feedback to students;
- to increase the depth of student thinking inside the classroom;
- to increase the breadth and depth of course assignments, and course-related learning strategies used by students outside the classroom.

To increase active student involvement in the learning process, I required students to do a weekly assignment. Readings from the selected textbook, Mary Stewart's *Launching the Imagination: A Comprehensive Guide to Basic Design*,<sup>v</sup> introduced students to each week's topic. The weekly assignments required students to find a

visual artifact that best fit the topic discussed in class, document it, and using both graphics and text, analyze it to answer specific questions (i.e.: how can line be expressed in three dimensional form; how is positive shaped expressed in three dimensional form? and in four dimensional form?).

Rather than allowing students to analyze work found in books or on-line sources, I required students to study work from the University's Sheldon Museum of Art and Sculpture Garden, one of the most comprehensive collections of 20th century American art on a United States university campus. The prohibition to take photographs at the Sheldon Museum of Art was approached as an advantage; it required students to use sketching as a way of documentation. The extensive observation required to sketch, in turn, would contribute to the students' analyses. By using this university resource, I also expect to have encouraged future active participation in visiting other galleries, museums, and similar venues. (See Fig. 3)



**Fig. 3 - Elizabeth Gruett's (Interior Design) Weekly assignments: Documentation and analysis of design work from the University's Sheldon Museum of Art and Sculpture Garde**

Without students' clear understanding that a significant percent of their learning is their own responsibility, active learning cannot happen. With this in mind, I proposed reducing contact hours from twice a week, to once a week, and making a second hour of class available on-line for students to access at any time. This freed up one class period a week during which students applied the lessons from the lectures and readings in a weekly assignment: the analysis of an art piece from the Sheldon Museum of Art.

To increase the frequency of instructor interaction with and feedback to students, I proposed having smaller lecture classes. To do so, the lecture group was divided in two mini sections, A and B, and I met with group A on Wednesdays and with group B on Fridays.

Lecture "meeting" time was to be used to complement the reading rather than summarize it, allowing me to use part of the class to hold "critiques," or reviews, of weekly assignment as well as to offer an explanation of the following week's assignment. This feedback would not only help an individual student, but all those attending the lecture. In order to assist students, the textbook/course content was all formatted in a standard type of visual presentation (definition, categories, and uses of a concept) something where Mary Stewart's book is not always consistent.

To increase the depth of student thinking inside the classroom, I introduced in-class questions on readings and material covered in the lecture. These allowed me to measure students' comprehension of the material.

To increase the breadth and depth of course assignments and course-related learning strategies used by students outside the classroom, I proposed an outside activity as important as the readings, reinforcing the pedagogy of “learning by doing.” The final assignment was made up of an edited collection of the weekly assignments designed into a prototype product that could be sold at the Sheldon, titled *Walks through the Sheldon Museum of Art and Sculpture Garden*. This allowed students to compile a comprehensive summary of their learning from visual artifacts that they can revisit (See Fig. 4).



Fig. 4 - Students edited their weekly analysis into a prototype of a product that could be sold at the Sheldon titled *Walks through the Sheldon Museum of Art and Sculpture Garden*

## Analysis of Student Learning

Students' performance was measured at three points during the semester:

- Pre-instruction evaluation (including students' initial sketching skills) – not graded.
- 8-week into the semester evaluation – 2.8% grade (the same as a weekly in-class question).
- Evaluation of weekly analyses to be turned in at the end of the semester after in-class feedback – 60% of the grade.

Moreover, active student involvement was measured through attendance, weekly in-class questions, and the UNL's Peer Review of Teaching Program CLOSE Survey on Classroom Learning Outcomes and Student Engagement.

The *pre-instruction evaluation* was a quiz that measured students' understanding of, and ability to recognize two-dimensional design elements and principles in Edward Hopper's *Room in New York*, one of the Sheldon's landmarks. Also, in order to get a sense of how many students knew the Sheldon Museum of Art, students were asked if they had seen the painting, and if so, where (see Fig. 5).



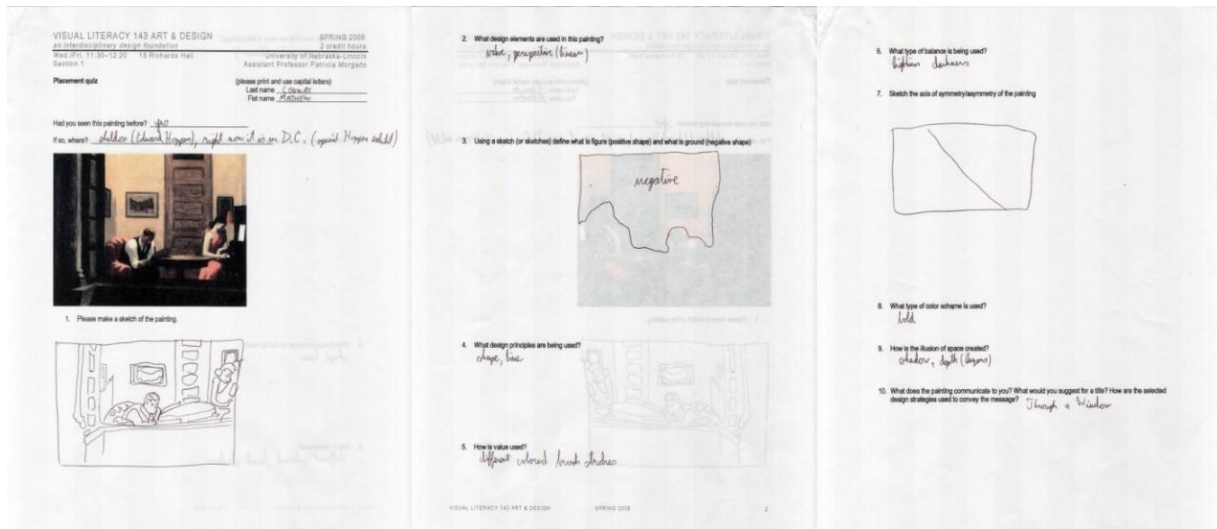


Fig. 5 – Mathew Conway (Architecture) pre-instruction survey

The average grade was 18.7% (high score 60%; low score 0%). (See Fig. 6) The students (including junior and senior standing students) demonstrated a low level of understanding of two-dimensional design concepts as well as of the analysis of a visual work. Although much of the content is delivered in a less formal manner in the Visual Literacy Program studios, the students appear to not retain earlier lessons, and/or not make the connections between the studio courses and *Art & Design*.

Regarding the painting itself, only 28.1% of the students had seen the painting before.<sup>vi</sup> This demonstrated that involving the Sheldon in the program would make this resource visible to students.

In relationship to the students' sketching abilities, 82.9% proved to have sketching skills, while the rest either had poor skills or did not sketch the painting. This demonstrated that it was necessary to review sketching techniques with them in order to clarify what was expected of them during their weekly assignments at the Sheldon.

Eight weeks later, after having covered the course's content on two-dimensional design, students were asked to complete a post-instruction (of two-dimensional concepts and applications) evaluation. The questions on the second quiz addressed the same topics as the first quiz. This time the painting to be analyzed was Diego Velázquez's *Las Meninas*. In order to avoid students' reliance on choosing an answer from multiple-choice options, at least three questions specifically required students to sketch and analyze the painting in a similar manner as their weekly assignments.

The average grade was 69.1% (high score 90%; low score 40%). The students demonstrated a notable improvement in relationship to the first quiz. It is important to note that the grade may have been affected due to two factors: only 58.2% of the students completed drawings and graphic analyses; on average the time spent on the quiz varied from 7 minutes 47 seconds to 47 minutes 43 seconds. Additionally, I attribute part of the grade to the complexity of the painting selected for the quiz; an example closer to the type of art work found at the Sheldon may have given better results.

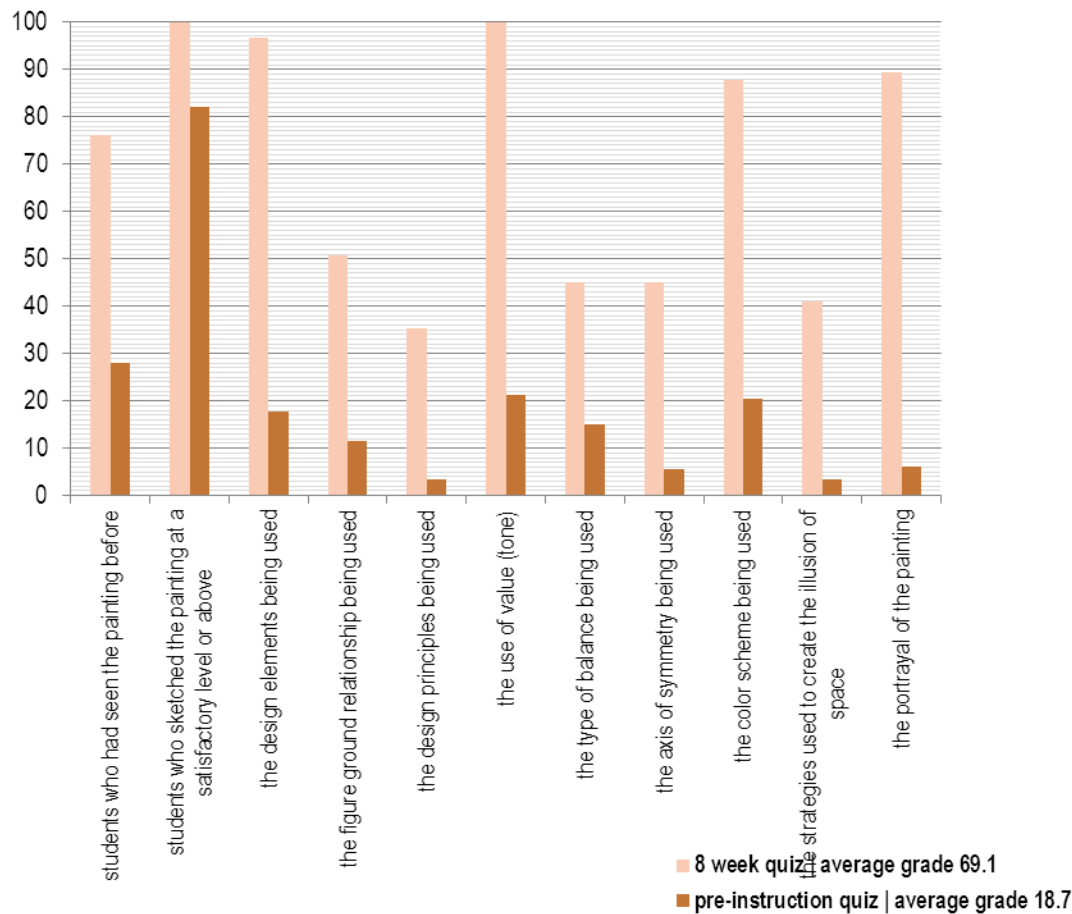


Fig. 6 - Pre- and Post-instruction quiz results

The final assignment was completed by 95.7% of the students. The average grade for the analyses was 90.9% (high score 100%; low score 50%). The design of the container for the analyses cards was graded separately, with an average grade of 85.4% (high score 100%; low score 50%).

The final grade was a combination of attendance (10%), in-class questions (30%), and the final assignment (60%). The average final grade was 83.2% (high score 99.17%; low score 8.88%). Although there was not much difference between the average final grades from spring 2008 and fall 2007, when I had last taught the course, the students' engagement in spring 2008 was higher.

Additionally significant in the measurement of active student involvement, are the results of the UNL's Survey on Classroom Learning Outcomes and Student Engagement (CLOSE). The responses to three specific questions relative to active student involvement in the learning process (question 4 in the section "factors impacting your learning"; and questions 7 and 8 in the section "personal motivations") show the following:

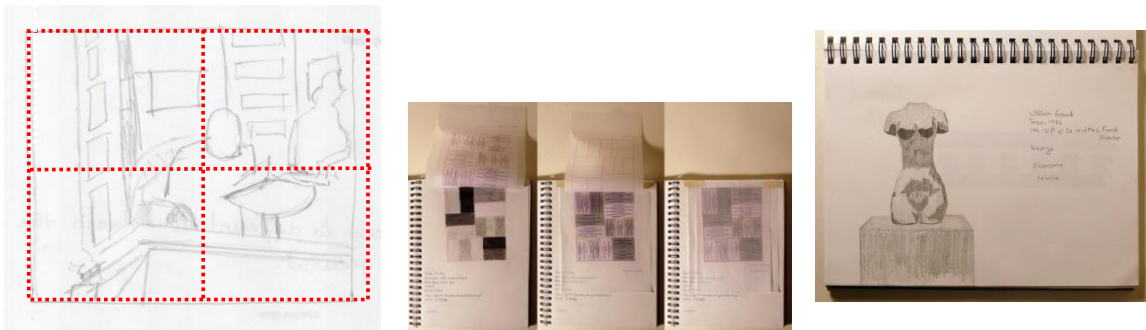
- 68.36% of the students found that their time-on-task had positively impacted their learning;
- 51.02% of the students considered that "half of time" - "almost all of the time" spent on out-of-class work was valuable to advance their learning.



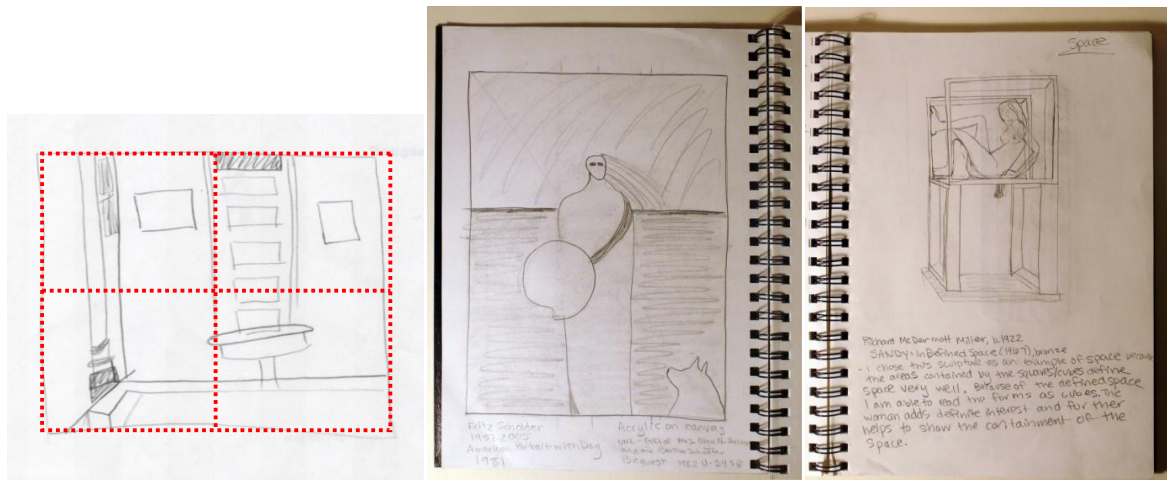
These results prove that by the end of the course, 50%-70% of the students had experienced first-hand the effects of active learning.

Considering that my goal for spring 2008 was to explore new strategies that would increase active student involvement in the learning process, it was particularly significant to follow the performance of six students from the five disciplines participating in the Visual Literacy Program. From their work one can observe

- Improvement from their initial level of knowledge to the end of the semester. In the pre-instruction quiz, many of the questions in the initial quiz were incorrectly answered or left unanswered (the average grade of these six students was 38.3%); by the end of the semester, their work demonstrated a clear understanding of the design concepts, not only assisting with definition, but also in identification of the use of these in art work. The average grade for their final assignment was "A."
- Improvement in their sketching abilities, not only to document, but also to analyze. The initial sketches from the pre-instruction quiz demonstrate some level of problems with proportions and/or placement of figures (see Fig. 7 and Fig. 8).



**Fig. 7 – Madhulika (Madhu) Pandraj (Interior Design) initial sketch of Edward Hopper's *Room in New York* shows her difficulties reproducing the proportions of the painting and placing of figures. The following sketches demonstrate Madhu's improvement in dealing with proportions, placement of figures, as well as representing the tone and colors used in the works analyzed. When analyzing three-dimensional work (weeks 10 and 11), she initially faced difficulties sighting the sculptures. Through repeated exercises she mastered not only capturing proportions of sculptures but also, using value to portray form.**



**Fig. 8 - Michaela's initial sketch of Edward Hopper's Room in New York shows her understanding of proportions and placement of figures; however it is important to note that Michaela did not include human figures. By following the explanations from the drawing handout, by the second week of classes, Michaela was able to sketch more accurate depictions of the paintings being observed. By the tenth week Michaela was able to draw a human form from a sculpture.**

- Increase in depth in the explanation of their analyses as well as for their selection of specific examples at the Sheldon. Throughout the semester, the students demonstrated an improvement in their verbal expression. (See Fig. 9)



**Fig. 8. - Michaela Vestecha's (Journalism) comments on the paintings being analyzed grew in depth and content. Regarding perspective, on week 8 Michaela wrote: a. Overlapping is used as the primary means for creating the illusion of space. Size variation also helps greatly in the in creating the illusion of space. The larger building up front and tall skinny building in the top left corner are prominent. O'Keefe uses small shapes to show all the lights from traffic, street lamps, etc. b. O'Keefe uses a horizon line at the top fifth of the painting which helps create depth. Other vanishing points are in between the buildings and tend to melt into each other which draws the viewer deeper into the space. Perception is altered in the random placement of a huge castle like structure in the middle of NYC, as well as the random placement of windows. The only ones O'Keefe shows are ones with light on and it is left for the viewer to comprehend the rest of the Georgia O'Keefe piece."**

- Important considerations for the design of the container (box) of their final assignment, showing their ability to apply the concepts learned throughout the course in their own design work. (See Fig. 10 and Fig. 11)



Fig. 10 - Allison Leapley's (Art and Advertisement) changed the size of the interior lining in order to fit the "brain" of the human figure. A careful selection of magazine cutouts was used to re-create the human figure.



Fig. 11 - Samantha Schmeackle's (Textile Design) cut out part of the exterior lining and exposing the interior lining, and used these as a positive shape and negative space of a composition.

## Conclusion

What did students learn from art/design work that the textbook and/or lecture alone would not have offered?

Their work demonstrates they have learned how to look at design artifacts and understand how these are composed, what composes them, and how important their composition is. By doing rather than exclusively reading, students were able to put into practice their critical thinking skills, which otherwise would have been restricted to the professor or author of a textbook. Likewise, by the end of the semester, more than half of the students had acknowledged the importance of their involvement in their own learning, a lesson that at the freshman level will impact their study habits throughout the rest of their years in school.

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## Notes

<sup>i</sup> The author was an assistant professor of architecture at UNL from 2002-2008, and is currently an associate professor of architecture at North Carolina State University.

<sup>ii</sup> Until the academic year 2004-2005 *Visual Literacy Lecture* was a component of the program's studio units and was delivered by the team of faculty members in charge of the studio courses. Since the academic year 2005-2006, the course is an independent unit titled *Art & Design* in the charge of an individual faculty member.

<sup>iii</sup> *Art & Design* is a pre-requisite for second year Art, Architecture, Landscape Architecture and Interior Design studios.

<sup>iv</sup> Digital Technology was used to make slideshows, handouts, and recordings from lectures available on-line; in-class questions were incorporated and assessed using Personal Response System (PRS); on-line testing was utilized through Blackboard Learning System.

<sup>v</sup> Stewart, Mary (2007). *Launching the Imagination: A Comprehensive Guide to Basic Design*.

<sup>vi</sup> 7.5% of the students had seen Edward Hopper's *Room in New York* at the Sheldon, 16.4% at another class, and 2.1% in books, and 2.1% on the internet.

### **Reference**

Cuseo, J. (2004). *The empirical case against large class size: Adverse effects on the teaching, learning, and retention of first-year students*. Invited paper posted at the First-Year Assessment Listserv, sponsored by the Policy Center for the First Year of College, Brevard, North Carolina. Paper posted to <http://www.brevard.edy/fyc/listserv/remarks/cuseoclasssize.htm>