THE VALUE OF A 6B PENCIL SKETCH

Deborah Bentley & Nihal Al Sabbagh
Abu Dhabi University, Abu Dhabi, U.A.E.

Abstract

Recently there has been a discussion on the “Lost Art of Sketching” within the architecture profession, insisting that hand drawing is vital to the design process. The left side of the brain gets a workout every day with computer use, while the right side, the creative side languishes like a long forgotten toy. The design studio should be “the gym” for the creative mind, however if the student is unprepared, and has not been taught to utilize design tools the experience will be wasted. The study compares the different methodologies that the authors practiced at Abu Dhabi University in the United Arab Emirates, to enhance the student sketching and analytical skills for the studio, while using the same learning objectives. The study utilizes Kolb’s Experiential Learning Theory to analyze the success of the different teaching paths.

Introduction

Students worldwide have been discouraged to continue with Visual Arts in secondary schools education since the 1960’s. Academically it is harder to achieve good grades in the visual art subject and, as it becomes more competitive to gain university places, students are discouraged to risk the time and effort on a subjective subject. In England art education has also been devalued, the government introduced an “English Baccalaureate” as a performance indicator in 2010, in which art is excluded. The Russell Group, which represents the twenty-four leading research universities in the United Kingdom, has stated that art is not a “facilitating subject” for university entrance.

Teaching in secondary schools in Arab states is renowned for being teacher driven, where students learn by rote, and memorize facts, rather than learning through experience and activities. Rarely are students being asked to question what they are being told. The majority of the higher learning institutes in the United Arab Emirates are Western based universities that demand analytical and critical thought, were students are expected to think “out of the box” and creatively solve problems.

The UAE Ministry of Education is addressing this issue in their secondary schools, however there is a “time lag” of students that have been taught the old fashioned way entering into the higher education system without critical thinking skills.

Abu Dhabi University

Abu Dhabi is the capital city of the United Arab Emirates. The city is smaller than it’s more famous sister city Dubai, however in the last five years has become home to many iconic buildings including the zero carbon city Masdar, by Foster + Partners. The Department of Architecture and Interior Design was opened at the university in 2008, and now teaches across two campuses in Abu Dhabi and Al Ain. The university follows an American University Curriculum with all lessons taught in English.

The Programme

After establishing the undergraduate courses, the Department of Architecture noted that the students taking the course needed additional education to boost their graphic and analytical skill, so recently added a ‘Graphic Thinking and Freehand Sketching’ course as part of the foundation year. Older students were allowed to take the course as an elective. English is the second language for the majority of the students, and people living in the United Arab Emirates, so the ability to communicate through the universal language of drawing rather than verbally is crucial.

The university is gender segregated at undergraduate level thus all the students were female mainly aged between 18 and 25. The majority of the students are not Emirati’s. They are children of established expats from the Middle East, East Africa and the Indian Sub Continent and have been born and raised in the Emirates. The students were a mixture of Interior Design Students and Architecture students.

The Classes

The learning objectives included being able to draw architecture and landscape, think graphically and express thoughts through sketches, solve problems through abstraction and analysis, and communicate ideas graphically.

The classes were scheduled to be a teaching studio, with an hour lecture followed by 3 hours of studio work. The students, regardless of how long they had been studying at the university displayed a variety of drawing ability. The instructors tested the students without their knowledge for their art skills and graded them very good-poor.

Instructor 1 is a British Architect, who has taught in the UK, and practiced globally. She had recently returned to teaching. Instructor 2 is Middle Eastern and she has worked and taught in the Middle East.

Styles of Teaching

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Class A: (Instructor 1). The class was taught with formal lectures, class work, homework and four field trips. Videos were not utilized, and there was an emphasis on drawing from life. 2-d architectural graphics were emphasized at the beginning of the semester. There was no lecture given on field trip days. The class had twenty-five students, the majority being from first and fourth year. Thirty three percent of the class had good-very good basic art skills.

Class B (Instructor 2). This class was taught with lectures, class work, homework and one field trip. Videos were utilized regularly, and students were allowed to utilize photographs as well as drawing from life. 2-d architectural graphics were introduced in the middle of the semester. This class had twenty-one students the majority being in 2nd year. Fifty five percent of the students had good-very good basic art skills.

Class C: (Instructor 1). The students were taught with lectures and class work, however the class structure was more informal. From the start of the semester the students discussed amongst themselves where they would go on a site visit that day. This allowed the students to practice what had been taught in the class that day, but also meant that the class acted in a collaborative manner. At the end of the semester the class decided to complete an independent project. The class work concentrated drawing from life first, and then followed up with architectural 2d graphics. This class had ten students, split between 3rd and 1st year. Twenty percent of the class had good-very good basic art skills.

The initial reason why class A and C were taught differently were logistics and climate. Class C was scheduled in the afternoon and evening when it is more pleasant to be outdoors.

Assessments

Homework assignments counted for 30% of the final mark. Class A with 25 students, had reduced individual tutorial time, therefore the instructor allowed students to resubmit homework assignments to encourage improvement. Class B’s instructor was strict with deadlines and submission of class work. Students had the option of resubmitting once. Class C did not have office hours as the students were in a different city, so they too could resubmit assignments as many times as they wished, and be tutored by email.

Final Project and Exam: The final project consisted of visiting a building and recording it in 3 different ways: perspective, elevation and detail. The students were also asked to complete a zoning diagram and critically analyze good and poor design features of the building and produce a schematic drawing how they could improve the design.

The instructors agreed to add a final written exam to ensure that all the learning objectives had been accessed, especially focusing on solving problems through abstraction and analysis.

Spatial Awareness.

The first task was asking the students to draw a map of Abu Dhabi for a Japanese student who did not speak either Arabic or English. Abu Dhabi has many iconic and unique buildings, and like New York is laid out on a grid, however unlike Tversky’s students at Stanford University, none of the students in the any of the classes could even start to draw a map accurately7. Women have been found to have less spatial connotation8, but the fact that few of the students drive, and culturally they are not encouraged to explore the city may have also been a factor in our students apparent lack in spatial awareness.

Instructor 1 sought to redress this apparent in-balance by adding field trips to her course.

The students were introduced to Kevin Lynch’s9 Way-finding techniques that allowed them to think sequentially, relating element to each other. They realized that they did in fact know their city, however in the students case the landmarks and nodes were shopping malls and the Corniche, not iconic buildings.

Visualizing in Three Dimensions

Architects and Interior Designers unique skill is to be able to mentally inhabit a 3 d space while drawing it in 2d10. This technique is usually learned and honed in university. The advent of 3-d Computer Aided Drafting (CAD) programmes including Sketch-up has allowed the student to instantly jump into designing in perspectives and axonometric on the computer. One of the issues that the studio tutors face is that a student will loose the concept of scale and proportion when looking at the screen. The complaints arising from the design tutor are akin to Kwan’s11 research and Lawson’s12 comments in regarding CAD, when novice designers with little design vocabulary attempt to create 3-d objects at concept stage.

The architect’s ability to draw a straight line is a skill sets that amazes the general public, however as with any skill it come with practice. To do this most architects will have penned more than 10,000 hours drafting13. Each week the students were expected to draw lines and squares free hand again and again, along side another activity till they were perfect.

Our students were set tasks where they would practice drawing in proportion, not scale, and in 3-d from the outset to boost their confidence in drawing architecture. During the second lesson the students learned how to draw an
axonometric by hand as shown in Figure 1 from first principals based on drawing a cube using tell tale lines and straight lines.

The students in Class A continued to work on freehand 2d architectural graphics, for another week while Classes B, and C were taught one point perspectives including at least one field trip. Classes B and C then progressed to 2d architectural graphics, while class A started on perspectives.

As part of the 2d architectural graphics lesson Class A students were asked to copy and render a historic house plan and elevation, however they had to amend the elevation in line with the current renovations to the house. Only 8% of the class submitted the homework on time and all of these students were in the 4th year. Identical homework was allocated to Class C two weeks later, after completing the Perspective 1 lesson and having visited other historic buildings of a similar nature. 70% of the class submitted their homework on time.

Class B started by looking at existing drawings of perspectives and then practiced drawing the plan that it was derived from it. Their instructor had them repeat the same task numerous times till they gained the sense of freehand sketching. The drawings that students in Class B and C were being asked to complete were more realistic drawings that the students could understand. Around the same time Class A was given a still life to copy in pencil in order to practice hatching and shading. This homework was the one assignment that was resubmitted numerous times, by most of the students because they wanted to be good at ‘art’, to the detriment of the historic house architectural drawing submission.

Drawing architectural plans, sections and elevations is an abstract realization that only the educated in our field can understand. It is the construction industries hidden language, which it could be argued, is quickly going to disappear with the advent of Building Information Modeling (BIM). We cannot separate working in 2-d and 3-d any more.

In Gill’s paper “Visualizing Continuity Between 2-d and 3-d Graphic Representations “ she states that students may find difficulty in “translating a static explanation into a dynamic concept”, as the students have to reconcile the differences between two different drawing languages; “one that uses projection systems to represent qualitative information and the other that uses the same conceptual elements to communicate and represent quantitative information.”

The authors’ approach was that students have to be taught how to be able to switch between the two drafting languages seamlessly as this is how architects design, and this will be how the students will have to work when they start in the design studio and then move on to utilize CAD. Practicing architects use many drafting languages at one time, including computer software. “Sketching plays an important role in the early conceptual stages of architectural design” so the issue facing teachers today is to make sure that the student prefers to use a pencil, pen or even a stylus, rather than CAD to start designing.

After grounding the students in copying 2-d architectural graphics and teaching them how to draw one point perspectives the authors tested the students with our hypothesis. The students were instructed to follow the instructor’s verbal instructions. They did not know what they were being asked to draw. They started by drawing two conjoining squares, and then added another square within one of them. This was the plan of a teahouse with a garden. They had to add windows and doors and furniture, in plan. Then they were asked to transform the plan into a 3d perspective as shown in Figure 2. Within 3 hours the students had designed a room in 3-d that they had just sketch-designed in plan. Several of the students then changed the design when they discovered there was something they did not like or had not previously considered. The students were visually thinking, and developing their ideas.
Goldschmidt stated, “A design problem is solved when a satisfactory visual representation of a drawing concept is produced. To deal pictorial properties of the design concept, the designer utilizes visual thinking, which is represented through sketching. In serial sketching the designer systematically transforms images of the entity that is being designed: each sketch provides feedbacks that informs the generation of subsequent representations”.[16]

Grading

At the end of the semester the two instructors collated and compared the marks of the three classes and realized that after taking into consideration the different starting abilities of the students, Class A results did not quite align with the other two classes.

The question was posed “Were the varied results due to the students different learning styles[17], or was it down to the teaching methodology?”

Analysis

One of the most frequently utilized learning analyses is Kolb’s Learning Theory.[18] Kolb developed his model through the formulas generated by Dewey and Piaget. Dewey[19] stated that the learning process integrates experience with concepts, observations and action while Piaget viewed it as a four-stage cognitive growth cycle.[20] Kolb has a four-staged cycle that facilitates learning as shown in (Figure 3) comprising of Abstract Conceptualization, (AC), (lectures), Active Experimentation, (AE), (class work), Concrete Experiences (CE), (site visits) and Reflective Observation, (RO) (discussion). The CE is dialectically opposed to the AC as are the AE and the RO. Kolb then suggests four learning styles that students can be classified as, by utilizing his learning style indicator. Convergers are problem solvers, Divergers prefer to brainstorm, Assimilators prefer abstract ideas, and Accommodators learn from hands on experience.

Kolb and Kolb’s 2005 revised research on the LSI indicator suggests that Architects falls into the Assimilator quadrant[21], however the papers by Demirbas and Demirkan[22] from Turkey, and Kvan and Yunyan[23] from Hong Kong both illustrate that architects and designers learning styles can fall in all of the four quadrants. The students were tested using Kolb’s Learning Style Questionnaire (LSI) 1996 and asked to preference their abilities most like themselves in a row of 4 words, for 9 questions. The students’ results were analyzed and mapped onto Kolb’s LSI Grid (figure 4). The results showed that our students fell within the four quadrants, and there was no discernable difference between the learning styles of the students in each class.

This result closely follows the other two recent research papers. It should be noted that in the United Arab Emirates, architecture and interior design are seen as female professions. 80% of our architecture students and 100% of our interior design students are women.

The lesson plan was then analyzed using Kolb’s Learning Cycle of Concrete Experience, Reflective Observation, Abstract Conceptualization, and Active Experimentation was completed for each lesson, and each class.

With Class A it was difficult to complete the Kolb learning cycle on field trip days due the number and diversity in skill sets of the students. No lectures were given on that day, and if a student missed the lecture class before or the post trip discussion at the next class after they would not complete the learning cycle.

The option of resubmitting homework worked for the students that wished to improve their drawing skills but for others it meant that they were completing homework out of sequence with the lessons.

With Class B it was fixed deadlines for class work and
homework submissions. The instructor also checked on their portfolio to ensure that they were following up in a timely manner. The students were encouraged to learn to draw at home through watching videos. The class had fewer site visits and reviewed buildings through taking photographs independently.

With Class C the learning cycle was completed at each lesson apart from one occasion, where the reflective observation discussion was held the following week, and all students attended. The students were very inspired by the videos of the First Year students at the Bartlett School of Architecture in London available on YouTube, and decided to do their own project and each created a personal interactive book about the semester.

Discussion and Conclusion

Our experience illustrates that all students, regardless of their learning style and spatial awareness can be taught to draw and think like a designer. The student may not yet have the ability to take a concept, abstract it, and incubate it to come up with a complex design, or have an extensive design vocabulary, but this can be instilled in them through other courses. At Abu Dhabi University, there is a second foundation course that concentrates on this aspect.

Through our observations, it appears that students may find it easier to be taught to draw using perspectives and then abstract the information to draw 2-d architectural drawings, rather than learning traditionally to draw 2-d plans sections and elevations and then trying to create a perspective. These observations need to be researched further in a setting with fewer variables to confirm if this is the case.

The students continued to practice the art of designing in 3d for another two weeks. The students were drawing complicated perspectives faster than they could have drawn them in CAD. When surveyed at the end of the course 70 percent of the students who preferred computers initially said they would rather sketch a freehand concept because it’s faster for them. The authors intend to continue to track the students’ progress to see if this is the real outcome.

With the advent of 3-d computer visualization architects have lost track of the value of the of our ability to comprehend social and physical problems, analyze them and produce a sketch schematic drawing in a short space of time. There is a magical quality to this hand drawn skill as can be seen by the publication of Renzo Piano’s sketch ‘The Shard’ in London. Sketching is one of the principal means of recording creativity in an architect and we should be passing on this skill set to the younger generation. It is a unique ability that architects need to value, and then the client and others will value too.

Notes


21 Kolb, A. and Kolb, D.A. "The Learning Style Inventory-Version 3.2 2005 Technical Specifications" Experience Based Learning Hay Group, p27

