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# **AC 2011-338: FRESHMEN'S FREEHAND DRAWING ABILITIES WITH MULTI-MEDIA: AN ANALYSIS OF PORTFOLIOS WITH GRADING RUBRICS**

**Suining Ding, Indiana University Purdue University, Fort Wayne**

SUINING DING is an Associate Professor at Indiana University Purdue University Fort Wayne. Her research interests include digital 3D modeling, cross-cultural comparison of architecture, cognitive perceptions of interior space and relationships of human behavior and environment.

# **Freshmen's Freehand Drawing Abilities with Multi-media: an Analysis of Portfolios with Grading Rubrics**

## **Abstract**

This paper presents the results of freehand sketching portfolio analysis. The author has taught the freehand sketching course for the past seven years. Pencil, ink and markers are three major media that are introduced in freehand sketching class. It is a freshmen course offered during the first semester for incoming interior design major students. Most of the freshmen do not have any drawing experience before they take freehand sketching class. It is required to turn in three portfolios including pencil portfolio, ink portfolio and color portfolio during the semester. All the portfolios are evaluated by the rubrics. The rubrics include value, line qualities, perspective and media combinations. The author has kept all the grading rubrics over the years. In order to get insight of freshmen's ability with multi-media and assess the learning outcomes, the author conducted an analysis based on the grading rubrics. The results of analysis provide valuable suggestions to curriculum design regarding freehand sketching.

## **Statement of Purpose**

### *Introduction of the Background of Freehand Sketching Class*

This paper presents a study that analyzes freshmen's drawing ability with multi-media in a freehand sketching class using the grading sheets with rubrics for portfolios. Three drawing media, pencil, ink and marker were introduced in this course through demonstration and lecture as well as drawing exercises. In this class, field sketching is also incorporated in the learning activities. Students are required to submit three portfolios including pencil portfolio, ink portfolio and color portfolio. Inside the pencil and color portfolios, pencil master drawing and marker master drawing are also need to be included. This 17-week-long studio course is designed to allow students to explore basic drawing skills using basic three media. Typically, the class starts with a short lecture of the new concept and principle followed by an on site demonstration. The demonstration is conducted through the Elmo camera that can project the drawings to the screen. After the demonstration, a drawing exercise will be assigned to the class.

The class uses a unique approach of teaching freehand sketching for interior design students based on Betty Edwards' "Drawing on the Right Side of the Brain" (Edwards, 1999) as a theoretical framework. This freehand sketching course's pedagogy was developed by featuring four perception skills: perception of edges, perception of spaces, perception of light and shadow and perception of spatial relationships. During my years teaching of freehand sketching class, I found that this approach increases students' confidence in drawing and accelerates learning progress in a sequential way that leads to the next level with solid basic concepts and skills. In addition, Nobel Prize winner and psycho biologist Roger W. Sperry's research on human brain-hemisphere functions affirmed this approach. His stunning finding that the human brain uses two

different modes of thinking, one verbal, analytic, and sequential and one visual and perceptual becomes the rational of this pedagogical framework. Therefore, introducing the right side of the brain and left side of the brain is the first approach of teaching how to draw. By introducing this concept, students get to understand why learning four perception skill is important and fundamental. Students also get to understand that they have to switch the left mode to the right mode in order to perceive the object in a correct way. The first perception skill, perception of edges is learned through contour drawings; perception of space is learned through negative space drawings; while perception of light and shadow is learned through values drawings and then the last, perception of spatial relationship is learned through perspectives. These four perception skills become the thread that goes over the lecture, demonstration and drawing assignments.

### *Purpose of Study*

It is agreed by educators and practitioners that freehand sketching is a critical skill for designers. It is required by Council of Interior Design Accreditation (CIDA) to incorporate illustrative sketching in interior design curriculum (CIDA Standards). Students need to be able to communicate their design ideas through graphic communication skills. Pable (2007) 's study indicated that educators and practitioners were unified in their positive perceptions of quick 3D sketches as a component of design process, and they believe that better design solutions would be generated if quick 3D sketches are used. Currently, no existing literature presents the assessment result of freshmen's freehand sketching ability using multi-media after the first semester. Therefore, in order to teach sketching course more effectively, it is necessary to do an analysis or assessment of learning outcomes. The results will be a valuable reference for curriculum and course design. Furthermore, it is the consensus that freehand line encodes a uniquely individual human thought and action partnership in that early on schematic design phase. People recognize the human attributes and a personality present in freehand lines, marks and strokes although they are with imperfections. The characteristics of freehand drawing make it a unique skill for designers.

### **Background Information**

Freehand sketching is the language that conveys the design intent, perception and impression of the designer. The way of how to perceive an object is very important when you draw. An experienced designer or artist will see an object in a way that is different from the person who has never drawn before. The right way to perceive the object is to use your right side brain and drop off your left side brain, which dominates your ability of numbering and analytical skills. In this class, how to perceive or see the object will be introduced at the very beginning of the class. Students will learn four basic drawing skills. They are perception of edges, perception of spaces, perception of light and shadow and how to perceive spatial relationships.

As mentioned before, the first drawing skill to learn is how to perceive the edge of objects. The right way to see object is to switch from L-mode to R-mode and use your right side brain and drop off your left side brain. Contour drawing is the place where most drawing lesson starts. Contour drawing is following the visible edges of a shape. The contour presents the outermost edges of a form, as well as dramatic changes of plane within the form. With contour

drawing, you need to focus on the edges - the outside of an object or the line made by a fold or pattern. Contour drawings were introduced by a revered art teacher, Kimon Nicolaides, in his 1941 book, *The "Natural Way to Draw"*. Nicolaides felt that the reason the contour method improved students' drawing was that it caused students to use both senses of sight and touch. This method has been used widely by art teachers. Betty Edwards used this concept in her teaching and her book *"Drawing on the Right Side of Brain"*. She suggested an alternate possibility, which is L-mode rejects the complex perceptions of spatial information, therefore allowing access to R-mode processing. Thus the contour drawing is not suited for the left side brain. Since the contour drawing is using the sense of touch and sight, these are the functions of your right side brain – exactly what are needed when you draw.

After students understand and practice drawing a contour drawing, in other words, they learned how to perceive edges of object; students are ready to learn how to perceive spaces. You know that when you draw, you will have to drop off your L-mode completely and use your R-mode. When a beginner starts to draw, they have preconceived stereotypes about object. For example, if this person is drawing a piece of furniture, like a coffee table, he/she knows that the coffee table has a glass top and the four legs have to be the same length, and so on. This kind of information will not help your drawing. Many art educators use the method, which is just to perceive the spaces around the object in teaching. As Betty Edwards stated in her book: "I believe that it's because you don't know anything in a verbal sense about these spaces". Therefore, you will be able to see spaces clearly and draw them correctly because you don't have pre-existing memorized symbols for space-shapes.

After gaining experience with the first two perceptual skills of drawing- perception of edges and spaces, students are ready for a more joyful part, which is the third perceptual skill – perception of light and shadow. It is a very important skill that enables you to make objects and space look three-dimensional through the use of "shading" that presents varieties of values. Different shadings can be achieved by using different crosshatching techniques.

The fourth drawing skill is how to perceive spatial relationship, which means how to see the object or space and draw it in perspective with correct proportion. There are two set of skills. The first set of skill is seeing angles relative to vertical and horizontal in the space, which is also called perspective, and the second set of skill is seeing proportions relative to each other in the space.

In additional to these four perception skills, line quality plays a critical role in all drawings. The first line quality is that the line weight should be different from the beginning to the end. The second line quality is that the line is broken with intention. Sometimes you will see a little dot in the line. It is called skip line. The third line quality is a line that looks like it is dancing on the paper. It is called exciting line. In a drawing, different line qualities should be used in order to make the drawing more vital instead of looking mechanical. The characteristics of freehand sketching are revealed mostly by line qualities, strokes and crosshatching. People can recognize artists' style and personality through these drawing aspects.

## **Process and Methodology**

### *Project Requirement and Studio Activities*

In this Freehand Sketching class, students were given the list of contents of each portfolio when start learning a different media. The project assignments were designed based on four perception skills. On the list of contents of each portfolio, the required numbers of drawings are given. For example, (3) Contour Drawings. It does not mean that students only need to work on three contour drawings. Instead, students are required to work on as many contour drawing as they can. Then they choose the best three drawings to be included in the portfolio. In pencil portfolio, a pencil master drawing is needed. The pencil master drawing is a field sketch, such as a lobby of the building on campus. It is required to use a matt to mount the drawing with rigid foam core board in order to be displayed for critique. There is no ink master drawing in ink portfolio. But there is a marker master drawing required for color portfolio. It is a field sketch, such as a setting in a local shopping mall and it is required to be mounted with matt and rigid foam core board. In color portfolio, students need to use markers, colored pencils and ink to finish their drawing assignments. There are two critique sessions in this class. One for pencil master drawing and one for marker master drawing. The critique session is conducted on the due day of the portfolio. The portfolio is due at the beginning of the class. The critique session provides the opportunity for students to see each others' work and get feedback from the professor and the student peers.

### *Analysis Methodology*

The analysis method is using rubrics in the grading sheets. Selected grading sheets are included in the appendix. The categorized data are analyzed with percentage of frequency distributions. Subjects were chosen from the past three years who took the freehand sketching classes. Normally there are twenty students in each class session. The class is offered in both fall and spring semesters. All the students are freshmen majoring in interior design and some of them are majoring in architectural engineering technology. Subjects' portfolios were analyzed based on the grading rubrics. Selected drawings from the portfolio were analyzed.

#### a) Research Design

The approach of this study is using assessment elements. These assessment elements were generated based on the rubrics in the grading sheets. All the rubrics were created based on four perception skills. For example, In order to measure the learning outcome of third perception skill, perception of light and shadow, value drawings are assigned as drawing exercises. Therefore, these assessment elements are directly linked with learning outcomes.

#### b) Subject Settings

Subjects were students who enrolled in Freehand Sketching classes from Fall, 2007 to Spring 2009. All of them are freshmen students major in interior design except some of them are majoring in architecture engineering and other majors. There are 60 students chosen from Spring

2007, Spring, 2008, Fall 2008 and Spring 2009 semesters. There are total 124 portfolios that were analyzed.

c) Data Analysis

Data were analyzed with assessment elements for each portfolio: 1) for pencil portfolio using six assessment variables (contour drawing, negative space drawing, value drawing, one-point or two-point perspective field sketching, line qualities in pencil master drawing and value in pencil master drawing). 2) for ink portfolio using three assessment variables (ink drawing with dots, ink drawing with crosshatching and ink perspective drawing) 3) for color portfolio using four assessment variables ( line qualities, value, media combination and perspective). Data were calculated by frequency distributions method. Since the objective of this study is to evaluate freshmen’s drawing ability with different media, the assessment variables were specifically focused on four perception skills that are the core topics in the entire course. Therefore, looking at students’ drawing portfolio with assessment variables is very important and critical. Data were drawn by histogram shown as the followings:

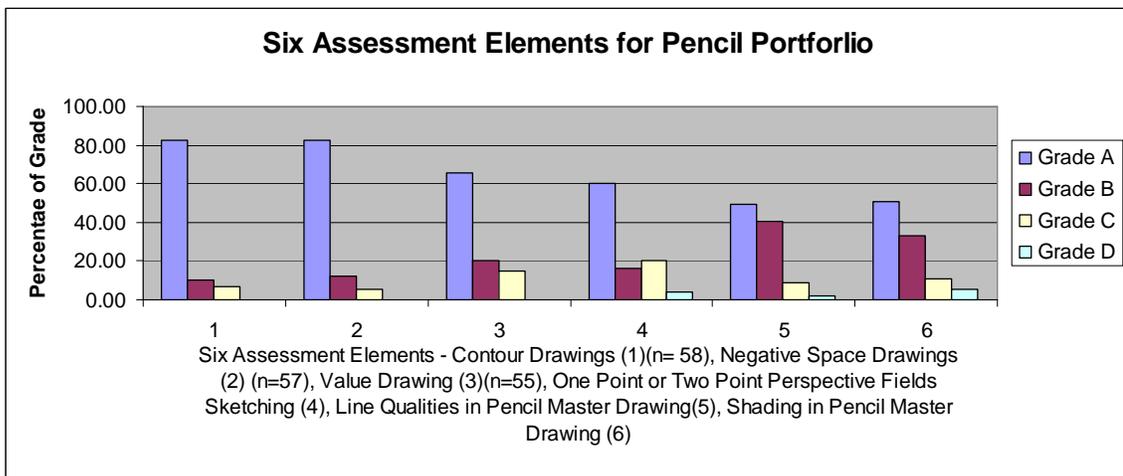


Figure 1: Six Assessment Elements for Pencil Portfolio

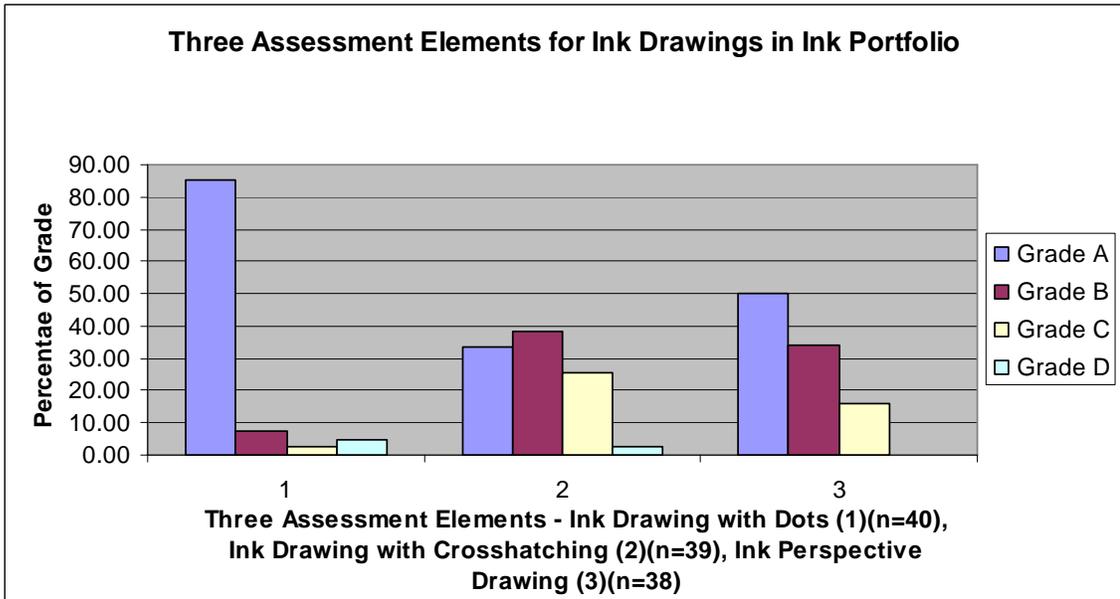


Figure 2: Three Assessment Elements for Ink Portfolio

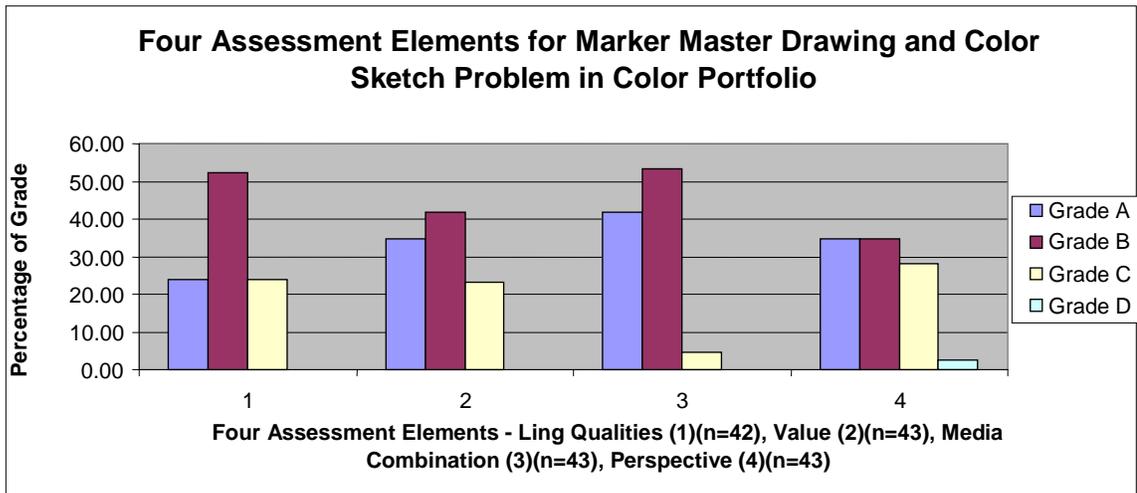


Figure 3: Four Assessment Elements for Marker Master Drawing and Color Sketch Problem in Color Portfolio

### Result and Discussion

Figure 1 presents the assessment results of pencil portfolio. Students are pretty good at contour drawings. 82.76% students got grade A for contour drawings. Students also did well

with negative space drawings. 82.46% of students got A for negative space drawing. Only 65.45% students got A for value drawings and 60% students got A for perspective. It states that students' performance in pencil perspective is moderate. It seemed that students have the weakness in the area of line qualities and value in pencil master drawings because only 49% students got A for line qualities and 50% students got A for value.

Figure 2 presents the assessment results of ink portfolio. Students are very good at ink drawing with dots (85% students got A). But students have the weakness in the area of ink drawing with crosshatching. It shows only 33.33% students got A, while 38.46% students got B, 25.64% students got C and 2.56% students got D. Students also have the weakness in the area of perspective. Only 50% students got A, while 34.21% students got B and 15.79% students got C in the area of perspective using ink.

Figure 3 presents the results assessment results of color portfolio. Students' skill need to be improved in the area of line qualities. Only 23.81% students got A for line qualities, while most students got B (52.38%) and C (23.81%). Students' skill in value also needs to be improved. Only 34.88% students got A, while 41% students got B and 23.26% students got C. Media combination skill seemed as another weakness. Only 41.86% students got A in this area. For perspective skill, it seemed as the weakest area because only 34.88% students got A, while 34.88% students got B and 27.91% student got C and 2.33% students got D.

The results revealed that the ability of presenting appropriate value in the drawing is a weakness for all these media at the end of the semester. Another finding of this analysis is that the ability to draw accurate perspectives still needs to be further developed. Pencil portfolio presented better understanding of value than ink portfolio and color portfolio. For ink drawings, using dots to present different value is better than using crosshatching. Line quality is another weakness in color portfolio. Students did better job in the area of line qualities in pencil drawings.

## **Conclusion and Recommendation**

Presenting different values in the drawing is the weakness in ink and color portfolios. Students did better job using pencils to present variety of values. Perspective is the weakness in all portfolios. Line quality is another area that needs to be improved. Students' ability of using different line qualities with pencil is better than using ink and markers. It has been confirmed that another perspective course is required in the curriculum in order to further develop perspective skill. It is also recommended that more emphasis need to be put on line qualities. The method of improve the skills with weakness is to provide students with more good sample drawings and more small exercises on value, line qualities and perspective. Crosshatching is another weakness in both pencil and ink portfolios. In order to improve crosshatching skill, assign more exercisers using good ink drawings from well-known artists. Students could just copy the drawing and learn the line strokes and crosshatching.

In addition to above suggested remedies to the weak areas, exposing students to famous artist's drawings and other art resources would be a good approach for educating students using

different drawing techniques. Look through a variety of interior design and architectural books as well as interior design trade magazines that feature preliminary sketches, visit art galleries, and visit university departments of interior design, architecture, or art for different perspectives on inspiration. You will start to notice that conceptual drawings do not always have to be technically perfect and the lines do not need to be straight or perfect (Ding, 2011). As a matter of fact, you will see double lines or even more lines for one single edge. Bert Dodson, author of *Key to Drawing*, calls this “restating” the lines, and says, “Trial and error is essential in drawing. . . . Restatements demonstrate that the drawing is a vital, changing process” (Dodson, 1990). Therefore, sketching is the process of recording on paper what you see. Leaving the “incorrect” or “imperfect” lines on paper will make your drawing more vital. These characteristics are the beauty of freehand sketching. Furthermore, discussion of characteristics of freehand drawing will help students understand the importance of applying all the techniques that have been taught in class.

The recommendation for teaching line quality is to present students with some master drawings, such as Leonardo da Vinci’s drawings. One extraordinary aspect of drawings by the famous masters is the quality of the lines they use to present the planes and roundness of surfaces. Every line is drawn deliberately. It has a clean beginning and a clean end. Where the lines are meant to be parallel they are parallel. Where they are meant to be curved they are all curved with regularity. It is rare to ever see a squiggle or a tick at the end of the line. Therefore, presenting these master pieces will provide students the opportunity to better understand line qualities and how to use different lines since using different line is such an important aspect in all drawings.

Although the drawing assignment for measuring four perception skills have been changed over the years, the core grading rubrics have not been changed because the purpose of assessing learning outcomes. The grading rubrics might be evolved and become more detailed in drawing techniques in the future if more learning outcomes need to be measured.

## ***References***

<http://www.accredit-id.org/accredmanual.pdf>

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*Appendix*

**Sketch Problem Grading Criteria**

Name \_\_\_\_\_

Points: \_\_\_\_\_

- **Final Drawing**

Line Use 25 Points \_\_\_\_\_

Shading / Value 25 Points \_\_\_\_\_

Media combination 25 Points \_\_\_\_\_

Perspective 25 Points \_\_\_\_\_

Total \_\_\_\_\_

## Pencil Master Drawing Grading Criteria

Name: \_\_\_\_\_

Field Sketch 20 PTS \_\_\_\_\_

### Final Drawing

Line Use 20PTS \_\_\_\_\_

Shading 20 PTS \_\_\_\_\_

Perspective 20 PTS \_\_\_\_\_

Presentation (Composition and Neatness) 20PTS \_\_\_\_\_

Total 100 PTS \_\_\_\_\_

## Marker Master Drawing Grading Criteria

Name: \_\_\_\_\_

Studio Sketch 35 PTS \_\_\_\_\_

### Final Drawing

Value 45PTS \_\_\_\_\_

Perspective 45 PTS \_\_\_\_\_

Line Qualities 45 PTS \_\_\_\_\_

Media Combination 30PTS \_\_\_\_\_

Total 200 PTS \_\_\_\_\_