Engaging the Brain: Art and The Science of Dentistry

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Personal Interest as a Dental Educator

- **Clinic consults:**
  - Focus on the EHR
  - Minimal eye contact
  - Multitasking
  - Time constraints
  - Struggle with disease description

- **Didactic oral pathology:**
  - All lesions look the same
  - Antiquated terminology
  - No physical or emotional connection to PowerPoint
  - Sound bite descriptions

Dental students at the MFAH
Goals:
• Enhance 3 skill sets:
  • Close observation
  • Unbiased analysis
  • Clear, empathetic communication

Objectives:
• To briefly describe the role of humanities in teaching art and the science of dentistry
• To discuss humanities in the clinical arts of communication and diagnosis
• To discuss the need for engaging the “right side” of the brain in a highly technical, instant messaging and reactive learning environment
Humanities in Medical Education

- Popular addition in curriculum
- Includes art, theatre, poetry, literature, narrative essays, music
- Emphasis on patient - not disease

Goals:
- Awareness of the art of medicine
- Increase compassion and empathy
- Increase tolerance for ambiguity
- Recognize biases in interpretation
- Encourage reflection
- Grant VJ. J Med Ethics 2002;28:45
Arts and Improved Visual Skills

- Art-based learning in 50% of medical schools for teaching observational skills  (Rodenhauser P. Teach Learn Med 2004)

- Improved visual diagnostic skills in medical students who participated in art workshop  (Dolev J. JAMA 2001; Bardes C. Med Educ 2001; Bell L. Anat Sci Ed 2014)

- Improved assessment scores in standardized patients  (Lunstroth R. UT Innovations, 2006 )

Art in Science: Enhancing Observational Skills

- “Is she about to place the flower in the vase or is she extracting it?”
- Visual literacy: the process of deriving meaning from a visual object.
- Finding a variety of meanings in an observation by being open to the unfamiliar.

Frederic Leighton, Mrs. James Guthrie, 1864-65, oil on canvas, Yale Center for British Art, Paul Mellon Collection, B1978.43.10.
Art is needed for creativity and critical thinking – presently, we are creating a group of robots.
Pictorial Superiority Affect: Visual imagery is the most powerful tool for learning

Improved learning with more senses, including emotions

Richer encoding = richer memory and recall

Boost learning and retention: Prior experience, Pictures, Practice (Jeter C, et al. ADEA Workshop 2014)
The Art of Observation at UTHealth

History of the Program

• In 2003, medical school partnered with the Museum of Fine Arts – Houston for elective
• 2005 – present: activity for Summer Medical and Dental Education Program, RWJ grant
• 2011 – present: medical and dental students participate in this interprofessional elective
• 2013 – dental faculty development activity
• Funds through the MFAH and UTHealth McGovern Center for Humanities and Ethics
Team-taught course at MFA-H

30 medical and dental students each semester for 3 evenings

Interactive classroom and gallery activities

Focus:
- Close observation
- Unbiased analysis
- Clear, empathetic communication

Class 1

Interactive Lecture
  Close Observation &
  Accurate Description

Examining Clinical Photos

Gallery Activity
  Impressionism
  Post-Impressionism
  Expressionism
  (Audrey Jones Beck Building, 2nd Floor)

The University of Texas School of Medicine and School of Dentistry students participating in The Art of Observation. Photo: Jay Heuman.
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Roman, *Portrait Figure of a Ruler*, 200-225, Bronze, 82 x 49 3/4 x 17 1/2 inches, MFAH, Gift of D. and J. de Menil in memory of Conrad Schlumberger, 62.19.

Class 2

Interactive Lecture
Acknowledging & Dealing with Bias

Gallery Activity
African
Mezoamerican
South & Central American
(Caroline Wiess Law Building, 2nd Floor)

Seated Figure, Olmec, 1500–300 BC, ceramic, The Museum of Fine Arts, Houston, Gift of Mrs. Ralph S. O’Connor in honor of her cousins, Louisa Stude Sarofim and Mike Stude, 86.409.
Class 3

Examining Clinical Photos

Interactive Lecture
  Empathy and Clear, Concise Communication

Gallery Activity
  American Impressionism
  Regionalism
  Expressionism
  (Audrey Jones Beck Building, 1st Floor)

William Merritt Chase, The Apprentice (Boy with Apple), 1876, oil on canvas, The Museum of Fine Arts, Houston, Wintermann Collection of American Art, gift of Mr. and Mrs. David R. Wintermann, 84.444.


Lower-left: Charles W. Hawthorne, American Motherhood, 1922, oil on canvas, The Museum of Fine Arts, Houston, Museum purchase funded by the Houston Friends of Art, 27.8.


Description of Photographs

- Physical characteristics
- Facial appearance/symmetry
- Body proportion
- Posture/stance
- Clothes and accessories
- Attitude/personality
- Mental status
- Emotional overtones

Art and Disease

Seal (Photo: Sam Ruttyn)

Patient Observation

- What do you see?
- Where is the photograph taken?
- What about the level of alertness or mental status?
- What does not belong?
Course Exercises and Assessment

- Observations of individuals
- Description of professional portraits
- Description of patient photographs
- Pre- and post-course oral lesion description
- Reflective paper on artwork, clinical photographs and experience

Mirror (one of a pair), Italian or American, early 19th century, red pine, paint, and gilding, The Museum of Fine Arts, Houston, The Rienzi Collection, gift of Mr. and Mrs. Harris Masterson III, 96.1355.1.
Assignment #1: Observing Someone Else

“...The person I am observing is a man of ... Asian descent and skin tone. His eyes are narrow and his hair is straight, hand length and jet black. The man is suspended three stories up and descending. I’m able to get a glance at his face as he reaches to his side to grab between his squeegee and sponge. He is a hard worker .... while suspended on a high-rise building. His shirt is blue with long sleeves and a collar and his pants are slate gray. He is also wearing tan work boots and dirty gray gloves with holes cut out for his fingers. I must admit it is somewhat mesmerizing watching him swing back and forth across the windows sponging and wiping, meanwhile a fall of deadly proportions lies only a 2 x 8 plank of pealing green paint beneath him. Yet he doesn’t seem to notice anything, but what is right in front of him - the task at hand. The benefits of the job far outweigh the risk of an unfortunate accident. “ Dental Student
Describe Oral Lesion as Art

**Global and Specific Description**

- Visual language: swirls, curls, crevices, velvety, scalloped
- Noted asymmetry
- Tongue pattern, color
- Age and gender
- Skin color, complexion, makeup
- Red patch on corner of mouth
- White spot on lateral incisor
- Tender to painful
- Appeared healthy
- Related to the condition

Benign migratory glossitis

**Assignment:**
Part of Reflective Essay
## Global and Specific Description

- **Visual language:** sparkling saliva, filmy, bold color that pops, fragile, shimmering
- **Comparisons:** “roll and tumble” of storm clouds or ruffled bed skirt
- **Surface texture, color**
- **Location, size, and shape**
- **Tender to painful**
- **Status of surrounding tissues**
- **Appears serious, dangerous, alarming; evokes fear**

**Blood-filled bulla from bleeding disorder**

**Assignment:** Part of Reflective Essay
Oral Lesion Description

Pre- and Post- Course Description

- Adapted from Aesthetic Development Interview, open-ended interview method describing art (Housen A, 2001-02)

Relevant Findings (N = 11)

- Increase in words: 49 (5-113) – 8
- Decrease in words: -32 (0-77) – 3
- Expression of feeling:
  Yes – 3; No - 8
- Global description:
  Yes - 8; No - 3
- More analytical (comparisons)
  Yes - 9; No - 2

Assignment: Describe the lesions on the tongue. Lymphangioma
Course Summary

Course Participants

• Total: 30-50 students/class (75 dental; 125 medical)
• Dental: 1.8:1 :: Females:Males
• Most were second-year students (DS, MS)

Course Evaluation Summary

• All agreed the elective was beneficial to their education
• All were made more aware of the way they make observations
• All learned a greater appreciation of art
• Strong interest in visiting the art museum again
Learning Assessment

*Pre- and post-tests results*

- Improved ability to make accurate observations
- Important to notice small or subtle details in patients
- Confident in sharing ideas and opinions with others
- Observations may be more helpful than reading a label or chart
- Important to notice the environment, space or context of an object or individual
- Opinions and attitudes regarding ambiguity and questioning their own ideas did not shift after the class (positive finding).
Reflective Essay

Art of Observation Reflective Essay

- Describe 3 pieces of art
- Conversations with others
- Emotional or ethical response
- Appreciation, tolerance for conflicting interpretations
- Correlation with patient care
- Interprofessional learning

Assessment

- Essays were acceptable or outstanding, using a rubric.
- 97.5% completed by due date.

**Overall Impression of the Elective**

- Enjoyed beautiful off-campus setting
- Class was nontraditional: no PowerPoint presentations, no tests, and not science
- Expanded vocabulary in both art and medicine
- Enjoyed being taught by an art expert
- Enjoyed “learning for the sake of learning”
What about taking this course with medical students?

• “It helped me understand their personalities better, and their culture – so intense and competitive.”
• “It is helpful to be around them because we will have to work with them in the future.”

In what ways will this course help you as a clinician?

• Enjoyed thinking and observing beyond teeth
• Time to look at “the whole person”
• Liked the experiential format with peer feedback
• Teaches the value of reassessment - not leaping to conclusions
1. Visual images and emotions are powerful tools. 
2. Clinical observation is enhanced with the integration of the arts. 
3. Discussing art increases sensitivity, team building and collaboration.

Lessons Learned:

Special acknowledgement to Dean Valenza for the educational funds.

Exterior, Audrey Jones Beck Building. © The Museum of Fine Arts, Houston
"I LOVE doing the type of analysis that we're doing ... because it makes me realize how narrow-minded I am and how much I need to remove my blinders. I think we all get caught up in thinking that we have a certain level of depth with our reasoning, but obviously there's something missing."

T.D.A.